Tactical Shooter

LAW ENFORCEMENT • MILITARY
PRACTICAL FIELD SHOOTING

July, 1998
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No. 6
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Editorial

The Lacedemonians are not wont to ask how many the enemy are, but where they are.

Agis (Fifth Century, B.C.)
(from Plutarch, Apothegms)

The Celebrated Hickory Ground Hog and Egg Shoot has its April 1998 match reported on in these pages, courtesy of our writer, Dr. Richard Maretzo. As many of you know, this particular match is a long time favorite of the Editor... who considers it a splendid test of "practical field shooting". Ten shots is the entire course of fire, at ranges from 100 to 500 yards, without any need to run a marathon, climb the face of Mount Rushmore, or wrestle an anaconda underwater. This year, at Hickory, North Carolina... 258 shooters were on the firing line to contest the issue. We are frequently asked if we really feel that there is a future for "tactical shooting" as an organized sport. Well, if you keep it simple... make it difficult, but not impossible (from the shooting viewpoint)... do not make it so physically demanding that Decathlon athletes blanch at the course layout... keep the entry fee reasonable... like the oft-quoted movie line said... "They will come". Some 258 shooters turned out for a small match in rural North Carolina this year... and many of us are betting that the entries top 300 next year. Repeat after me...

— Keep the course of fire simple.
— Course of fire to be challenging, but not impossible.
— Not physically demanding.
— Entry fee reasonable.

New York State tells us that they want to try their own version of the Hickory Shoot. Of course, there is not 500 yards of open space in the whole State (the original Hickory Shoot is contested at 100-300-500 yards), so they will be setting up that same ground hog target (as we understand things) at 100 - 200 - 300 yards. Same course of fire as at Hickory... 3 shots at 100 yards, 3 shots at 200 yards, and 3 shots at 300 yards (at the ground hog target), plus one shot at an egg at the final 300 yards. There will be some differences from Hickory. First, there will be two classes of rifles contested.: 1.) Hunting rifles, and 2,.) Varmint, target and benchrest rifles. And the match will be fired from benchrest rather than prone (rifle rests, bipods, and sandbags are permitted). Match dates for 1998 will be May 30th, June 28th, and October 10th. The May and June matches will start at 9:00 am and the October match will start at 10:00 am. The sponsoring club is the Brunswick Sportsman's Club, at Cropseyville, New York. (Note: The Explorer's Club tells us that Cropseyville is located east of Troy, New York (which in turn, is located a bit northeast of Albany, the State capital city.)

The club contact is Dick Johnson, who can be located at (518) 272-2225, or E-mail at wxgm49a@Prodigy.com. For our readers in the Northeast... short of your going to "the real Hickory"... this will be about as close as you can get for a while. And it will be interesting to see just what winning scores will be turned in for the various yardages; Hickory is contested from the prone position, while this match will be from a benchrest position. At Hickory the 100 yard stage is regularly enough maxed with a 45 score for the three shots. But... might Hickory's 300 yard record of 34 points be vulnerable?

Cover photo is courtesy of TS columnist Jacob Gottfredson, and shows Kenneth Zacharias of the Waco (Texas) Police Department SWAT team, with his .308 chambered tactical rifle from LOD Training Associates... a TX advertiser who is the subject of a three part review in depth from Mr. Gottfredson, starting in this issue. Summary of findings, greatly condensed... the darn things *shoot...* ! Jacob Gottfedson, long a top level competitive benchrest shooter, is no pilgrim (that's John Wayne talk) in the rifle accuracy world.

A recent correspondence exchange between one of our law enforcement friends (nameless here, as will be his department) was not without its mild humor...

Dear Dave.
Things kind of went to hell last night. We had a jumper on the suspension bridge and an armed robbery apprehension later. There was a steadily falling rain and the steel on the bridge was slick. The fellow on the bridge was fat, shirtless and in general offered little purchase. There were 4 people hanging on to him so when I got there so all the good places to grab were taken. He couldn't jump but we could not get him back on the bridge either. Lt. — finally got him around the throat to break the stalemate. He was either going to come in or be decapitated! Hey, whatever works!

Officer X

Dear Officer X,

No wonder you had all those problems with "the fat guy on the bridge".

As you know, I have a mild touch of vertigo on high bridges. I've come to hate the Memorial Bridge at Wilmington, Delaware... as well as the less imposing bridge over the Hudson at Newburgh, New York. The first time that I visited your city, I took one look at that suspension bridge, probably built in 1492, and asked how far it was out of my way for another approach into the city. I simply wanted no part of a bridge that looked like it was built by a kid with an Erector Set. I can only conclude that the rather heavy-set gentleman had the same thought cross his mind, and was peacefully minding his own business, and just trying , in panic, to get off the darn bridge before it collapsed, when you and your bully friends set on him, and attempted, by main force, to drag him back onto an obviously unsafe structure that (correctly) terrified him. I am, sir, startled by the actions of you and your associates.

The Editor

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Tactical Shooter©
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These stories may be far from history, where one usually reads that such and such a King sent such and such a General to such and such a war, and that such and such a day they made war or peace, and that this one defeated that one, or that one this one, and then proceeded somewhere. But I write what is worthy to be recorded.

Al-Bukhari, Ta'rikh (Ninth Century)

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PUBLISHED BY PRECISION SHOOTING INC.

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Tactical Shooter is published monthly by Precision Shooting Inc. Rates: US $32.00 one year, $60.00 two years. All other countries $44.00 Surface Mail. Air Mail: Europe - $94.00; Asia, Africa - $103.00; Pacific Rim - $109.00; Canada - $64.00, Mexico - $67.00.

POSTMASTER: Send all address changes to: Precision Shooting, Inc., 222 McKee Street, Manchester, CT 06040.

PLACE OF PUBLICATION: Sweet Printing Company, 97 Commerce Street, Glastonbury, CT 06033. Periodicals postage paid at Manchester, CT and pending at additional offices.

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Editorial

Continued from page 3

Errata. A typo unfortunately crept into the article authored by Captain S (Our Israeli military sniper instructor) on page 22 of the May issue of *Tactical Shooter*. The correct fact is that one minute of angle equals approximately .29 mils, not 2.9 mils. The period was misplaced in the article, and we extend our apologies for the misprinting error.

Always Leave 'em Laughing. PS columnist Hap Rocketto... well, before I get into this story, allow me to comment that, a few issues back, in our Editorial, we commented that new, aspiring writers for our pages just might be well-advised to call the Editor, and bounce their latest idea for an article topic off him first, before putting hours of work into some esoteric topic such as "The Role of the Garter Gun in Trench Warfare"... that the Editor was going to promptly return to the writer, probably by overnight mail. We thought that this would be an end to it... but off there in Rhode Island, apparently studying his newest issue closely, looking for new ideas and/or new worlds to conquer... the good (?) Mr. Rocketto decided that, by Heavens, a talented young writer such as he could probably do something with that topic... and the next thing we knew, we were looking at a four-page article detailing "The Role of the Garter Gun in Trench Warfare". Quite overwhelmed by the manuscript's receipt, present plans here are to make it the focal point of our Tenth Anniversary Issue. Watch for it.

Well anyway, Mr. Rocketto, knowing our interest in both the Eastern and Western Frontier's histories, thought we might enjoy it, and passed it along for our distraction and our amusement. We thought that you just might get a laugh out of it as well... (The writer is, unfortunately, unknown...)

"It's 1880, the decade of gunslingers and gentlemen. This is a story of one young man who wanted more than anything to be the fastest and most respected gunslinger in the west.

The place was Dodge City, Kansas in the Sawdust Saloon. The young man walked in and, to his surprise, sat Bat Masterson sitting at a table playing poker. The young man walked up to Bat and said, "Mr. Masterson, I would like to be a gunslinger just like you. Could you give me some tips?"

Bat put his cards down, looked up at the boy and said, "Son, I don't usually give out tips like this 'cause it could someday be detrimental to my health, but step back and let me look at you."

The boy stepped back and Masterson said, "You look good. You're wearing black, you've got two ivory handled guns with waxed holsters, and you look like a gunslinger. But what's more important, son, is: Can you shoot?"

The young man, happy to show how good he was, quickly drew his pistol from his right holster and without aiming shot the cuff link off of the piano player's right sleeve.

Bat Masterson said, "That's good shooting son, but can you shoot with your left hand?" Before Masterson could even finish, the boy had already drawn the pistol from his left holster and shot the cuff link off of the piano player's left shirt sleeve. Very proud of himself, the young man blew the smoke away from his six shooter and holstered his gun. "How was that?" the boy asked Masterson.

Bat Masterson smiled and looked up at the boy and said, "That was pretty good shooting son, I couldn't do better than that myself, but I do have one good tip for you."

"What's that?" the boy asked.

"I suggest you go in the kitchen and ask the cook for a large can of lard. Then take both guns of yours and stick them down deep in the lard."

Puzzled, the young gunslinger asked Masterson why he should do that. Masterson put his cards down again, leaned back in his chair, and said, "Well son, when Mr. Earp gets done playing the piano over there, he's going to take those two guns of yours and..."

Even in a declaration of war, one observes the rules of politeness.

Otto von Bismarck
(1815 - 1898)

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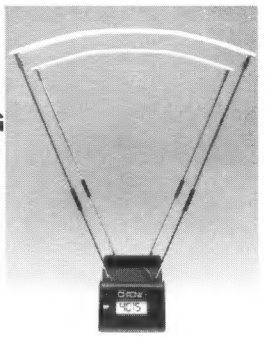

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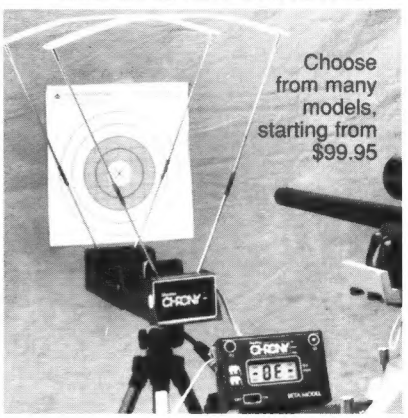

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Editor's Fantasy Page ...

Ireland's story is its people, the O'Neills and the MacCarthys, the O'Kellys and the O'Connors, the Norman families who became more Irish than the natives, and all the others who arrived and didn't want to go away. That story is endlessly reflected in Ireland's places: in the fallen walls of castles and abbeys, in sorrowful demesnes, in St. John Gogarty's Sackville Street that is Sackville Street no more, in the woods and hills where generations of rebels lay low. The story haunts the battleground at Kinsdale, and the towers of nervous monks. It has been played out on land and sea, by cliffs and caves, on riverbanks, in fields, over bog and stone.

The Fort over against the oak-wood,

Once it was Bruidge's, it was Cathal's,

It was Aed's, it was Ailill's,

It was Conaing's, it was Cuiline's

And it was Maelduin's;

The Fort remains after each in his turn —

And the kings asleep in the ground.

The Fort of Rathangan, Anonymous
Translated from the Irish by Kuno Meyer
Source: *A Writer's Ireland*, William Trevor, Viking, 1984
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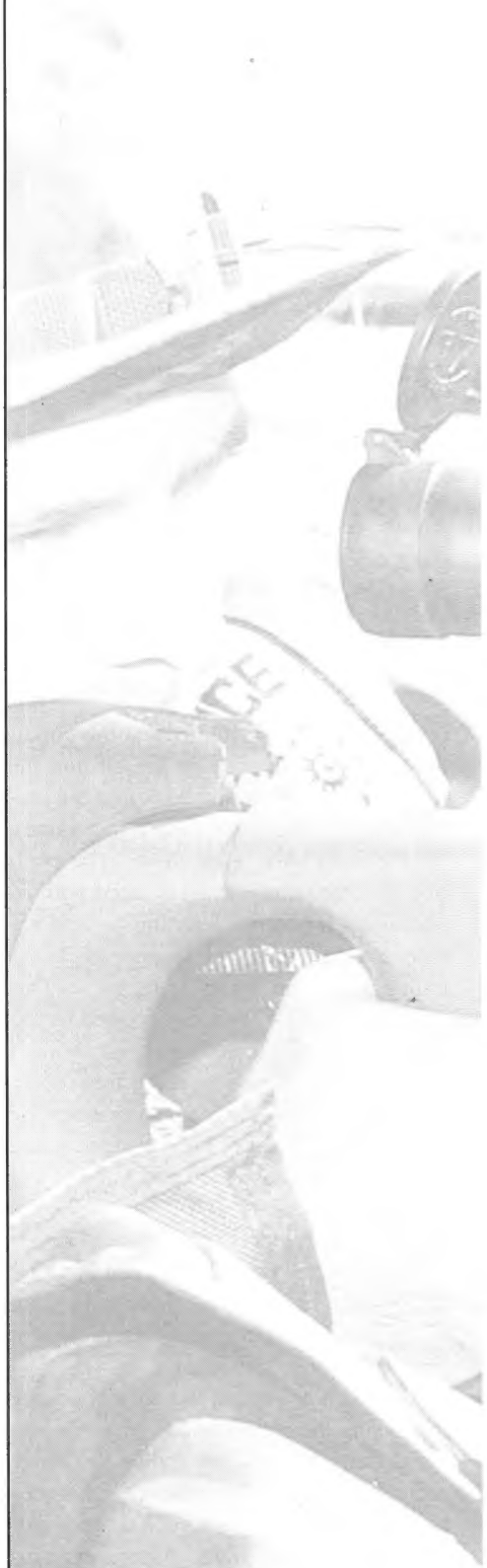

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LOD TRAINING ASSOCIATES

Accuracy Expectations Of A Modern Sniper Rifle:

The LOD Precision Marksman Rifle

BY JACOB GOTTFREDSON

The Man And His Mission

My first encounter with Billy Martin, President of LOD Training Associates came from an ear-numbing 4.5 hours on the phone.

A couple of weeks later, Martin and I had the opportunity to meet, this time for a solid 15.5 hours. It was, by that time, becoming clear that Martin is a man with a mission. In those first two sessions, I began to appreciate him as one whose intense personality is essential to the welfare of all of us.

It is intimidating to many of us to be in the presence of those who are driven ... obsessed with what they are doing ... unbending in their beliefs ... dedication absolute. To many of us this is all very tiring: energy with no end in sight, constant focus. Images of a cold beer, a hot shower, and a good bed begin to overcome you. But that's Martin.

Essential to the welfare of all of us? Martin, his company, and his staff are dedicated to saving lives. Surely the drive, the energy, the focus are virtues we ought to be thankful for ... for it is that energy, drive, and focus that may someday save the life of you or yours, or train you to save others. By the time I finished working with Martin, his staff, and his students many months later in preparation for these articles, I had a high respect and appreciation for their efforts. For I learned that energy, drive, and focus are not nearly enough to deliver accurate first shot rifle fire on demand, under stress, and under extremely adverse and constantly changing conditions.

As an avid benchrest competitor for the past twenty years, I had lulled myself into perceiving the act of shooting as a rather easy, though puristic, accuracy pursuit that is hobbyist in nature. To that end there is certainly a considerable amount of technical specialization. The requirements for the position shooter extend that pursuit another step ... an additional hardship, and an additional complication. The benchrest shooter's activity centers around the creation of precise components, both ammunition and rifle. Once this is completed, the shooter's final work is taken up with trying to beat the conditions between himself or herself and the target to put each round back into the previous hole. The game (and it is a game), for the most part, ends there. The position shooter (competitor) is faced with an additional problem: learning to hold the rifle in a skilled enough manner to put the bullet where he wants it to go. This "holding the rifle" is accomplished by the concrete bench for the benchrest shooter, and for many of us who shoot free recoil, we touch nothing but the trigger when the rifle is fired. For both, the distances and positions are established and known, and the target is paper.

The requirements of the tactical shooter are far more rigorous than that of either the position or benchrest shooter. In point of fact those requirements seem almost impossible or superhuman.

As much as I might like to, it is not my job to sing the praises of Mr. Martin's personal traits beyond his ability to deliver accurate rifle fire, and whatever techniques he might use to enhance such an endeavor by others. In this light, Martin explains that there are several components/levels

involved in the pursuit of first shot accurate rifle fire ... delivered on demand, under stress. Put into broad categories they, in part, comprise the following:

1. Quality ammunition
2. A precisely and correctly built, ergonomic, accurate rifle and associated equipment
3. The relationship or symbiosis between ammunition, rifle, and shooter
4. Physical, mental, and technical preparation of the shooter
5. Knowledge of the technical aspects of engagement
6. The ability to handle stress and hardship in order to deliver accurate rifle fire on demand, under stress

While the benchrest and position shooter might believe that all of the above are aspects of their own ability to deliver accurate rifle fire, they are not in the same league (no put-down intended). Accurate rifle fire to me, for example, means watching the flags and either knowing how to hold for them or waiting for them to return to the previous condition ... the tactical shooter has no such flags. I take a considerable time to set my equipment on the concrete bench and adjust my equipment ... the tactical shooter has no bench, and the luxury of time may or may not be available . In point of fact, the tactical shooter may have to drag his rifle (like a snake on his belly) over several hundred yards in order to deliver fire. My target rests firmly stapled to the backer without emotion or concern, not daring to move, while I take any number of sighters to ensure a good hit on the record target. The tactical shooter does not have such an accommodating and predictable stationary target, and sighter shots are not allowed. For law enforcement, one shot incapacitation is required, and the consequences are dire.

The consequences of good or bad shot placement on the target of a benchrest shooter are inane indeed (though to watch some competitors, you might not think so). The benchrest and position shooter has a known, predetermined distance that can be set in his scope with leisure and assurance and without dire consequence.

But the fact is, the tactical shooter must shoot at any distance, without benefit of contrived aids, sighter shots, the latitude of predetermined time requirements, under stress, and in hardship conditions. And again, he must do so, in most cases, with one disabling shot.

If this feat can truly be done, it is with considerable interest that I hoped to find out how! I decided it would take some time and several sessions, dedicating my own time to convince myself of the possibility, and of the probability of success when humans are asked (ordered) to accomplish such awesome and life saving deeds under such considerable stress. I was beginning to understand Mr. Martin's fervor for his life's work.

By now you realize that I am not a sniper, nor have I ever been trained as one. The editor of this magazine assigned me the task of determining the accuracy that can be delivered by these rifles and by these men under field conditions. The only assurance that I can give you that this article holds anything worthwhile for you is that I tried my best to give an accurate and exhaustive account of what I found by studying LOD's equipment and training procedures for several months.

Most probably because of my background there seemed to be a logical course: first, establish for myself the ability of the rifle(s) and equipment to deliver precision accuracy. This is the purist side of the endeavor, and the one with which I am most familiar. This is the primary goal of the first three requirements

Continued on next page

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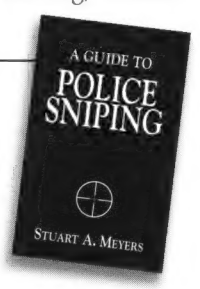

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LOD Training Associates

Continued

of Martin's list above. With that accomplished (if, indeed, it could be), the second requirement would be to participate in the training offered by LOD and see the results for myself. This activity would concern itself with the last three of Mr. Martin's list above.

This effort was rather exhaustive, and, because of space requirements in the magazine, had to be accomplished in 3 parts. Part 1 explores Martin's self designed LOD Precision Marksman Rifle. Part 2 presents the tests I used to establish the rifle's accuracy, using Statistical Process Control Analysis to validate their predictability. Part 3 finds me trying my best to keep up with that younger generation whose eyes and reflexes are only things that flutter, now and then, in and out of my memory. This was at one of Martin's training courses conducted at the White Sands Missile Range in New Mexico in early March, 1998.

To accomplish the first step, Martin graciously gave of his time to travel to Corpus Christi for a full day to familiarize me with his rifles, stocks, ammunition, and information. We shot several rounds throughout the day, Martin explaining what he could to an old dog like myself. He delivered that equipment several days later for my use, trusting that I could determine for myself just what the accuracy level of his equipment is.

The Man And His Rifle

We drove to my range, arriving shortly after dawn. Each of us unloaded our equipment, wondering the whole time what the other had in mind for the day. For one, I had no intention of laying down in the prone position with the idea that I could emulate a tactical shooter. Thus I began arranging my front and rear rests on the bench, placing my flags, hanging targets and mirage board, looking silly, I'm sure, to the accomplished sniper. I tried to keep in mind what my job was ... evaluate accuracy ... remain the purist.

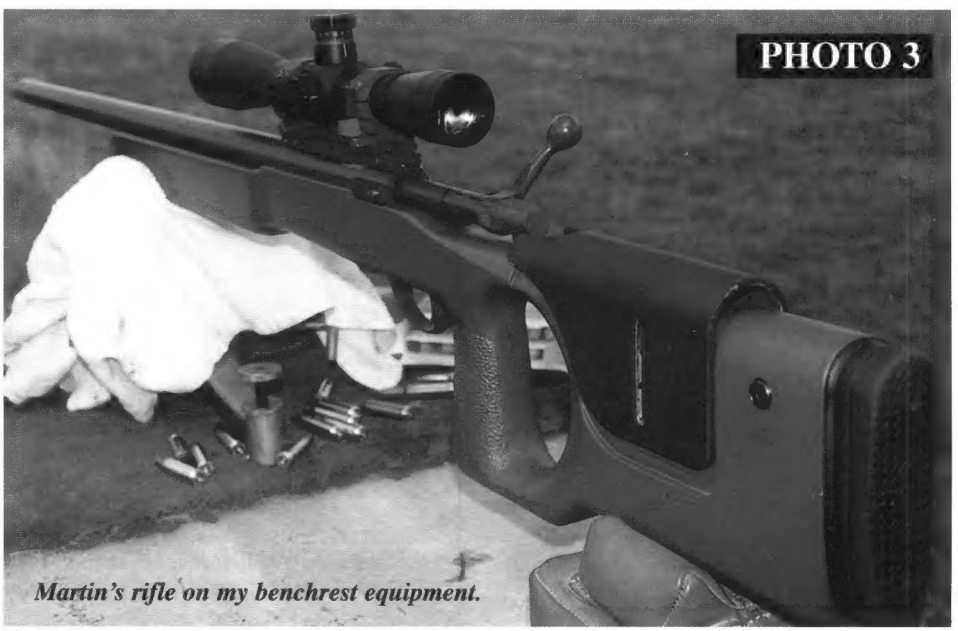
Martin was polite and accommodating, helping me to do whatever inane, little hobbyist activity I wished. With finality he handed me rifle and ammo, apparently giving his approval to do with same whatever I might. The caliber was .308,

Martin behind the Tactical Precision Marksman Rifle of his own design.

but I was informed that he supplies .300 Win Mag and .338 Lapua as well. If you don't like those, Martin will supply the stock only, fitted to accept your barreled action.

First impressions:

The **LOD Precision Marksman Rifle** (**Photo 3**) he handed me was OD green, a far cry from the elaborate colors of a bench gun ... as well it should be! But once I got beyond that, I was intrigued by the utility of the design, and, in fact, got to like the color. The stock is most imposing. I thought it a bit unusual at first glance until each of the features were explained and I considered them. With some modifications that are pecu-



Martin's rifle on my benchrest equipment.

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PHOTO 4

The adjustable cheek piece collapses flush with the stock.

liar to the tactical shooter, the cheek piece is adjustable (**Photo 4**). Martin has relieved a portion of the rubber-covered metal attachment at the top, front end. This accommodates the removal of the bolt when the cheek piece is positioned above the stock for a proper spot weld fit of the shooter (**Photo 5**). I found this cheek piece particularly comfortable ... a welcome feature for the man who has to lay over it for hours. The rubber is comfortable and accommodates cold, wet, or harsh conditions very well.

Returning to the stern, the recoil pad incorporates spacers to, once again, accommodate fitting the individual (**photo 6**). These

Continued on next page

PHOTO 5

The bolt can be removed without collapsing the cheek piece.

PHOTO 6

This view shows the rear sling mount, adjustable cheek piece, hand stock, and the butt spacers that are standard features on the Tactical Precision Marskman Rifle.

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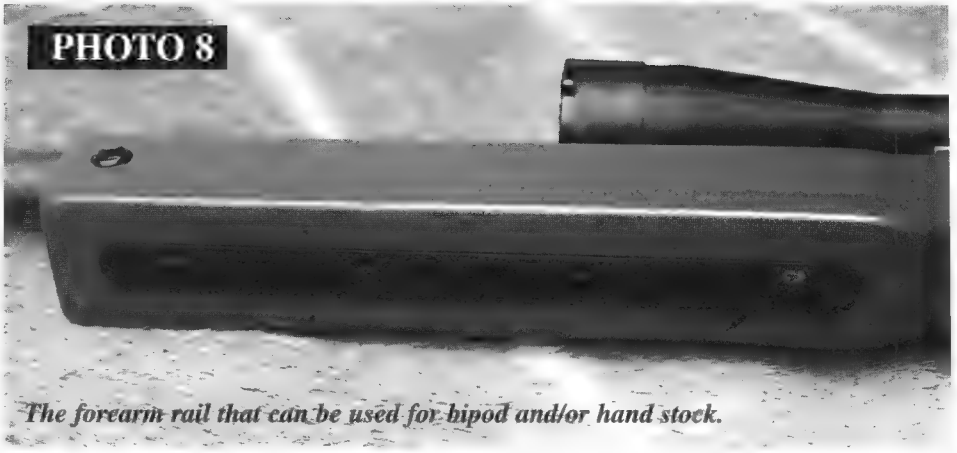
spacers are unique in that they can be easily raised and then swiveled out from the stock. Both adjustments can be made quickly.

The pistol grip is of the modified thumb-hole variety, with the angle of the grip advanced forward to match the natural angle of the resting arm-wrist-hand structure. After adjustment, I found that these features tended to put me very quickly into a comfortable, correct position to take advantage of the full image in the **Leupold Mark 4 M1 Tactical Scope's** eyepiece. This design also accommodates left hand shooters or shooting weak handed.

Advancing toward the bowsprit of this critter, I found a flat forearm and generous free floating of the 25 inch, match grade **Krieger barrel** (**Photo 7**) whose 1:11.25 twist and heavy configuration had been stressed relieved and lapped to perfection. Note the sling mount in this photo. The **McMillan stock**, designed by Martin, supported the 15 1/5 pound rifle on my rests without deformation or vibration. Embedded rails complemented the underside of both the forearm and butt (**Photo 8**). These slide rails can accommodate the sling in any desired position, the rear being attached to a target hand stock that allows the shooter to place the web of his left hand in a groove for support (**Photo 6**). This thumb-forefinger web rest is supplied by Kengs Firearms based in Atlanta and is used to reduce muscle tension and promote a relaxed, steady position. When installed in the front rail, the forearm supports a versa pod, also supplied by Kengs, for supported prone fire.



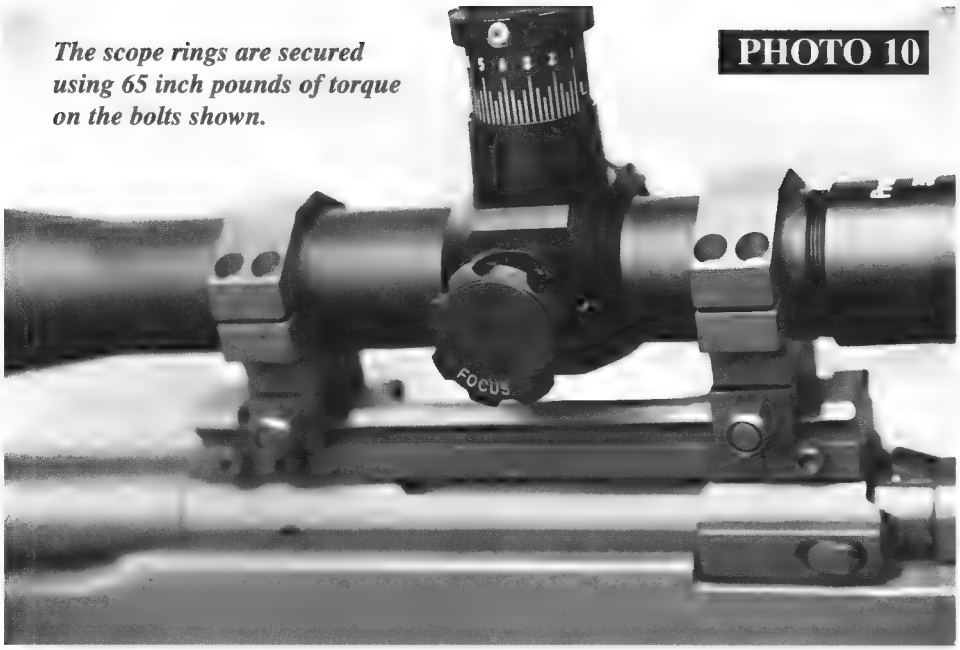
The forearm rail that can be used for bipod and/or hand stock.

Martin displayed an identical stock that had not yet been mated to a barreled receiver. The receiver channel is standard with the exception of stainless pillars, uniquely machined to provide positive support for the receiver. Martin seats the barreled action to the stock using a torque wrench that delivers 65 inch pounds. The stock can also be supplied in Brown, Gray, Black, or Desert Tan for both short or long actions popular on today's market to include: Sako, Remington, Ruger, Savage, and Winchester. Martin has designed the stock to reduce recoil effects as well.

The **Sako** action, preferred by Martin for its function and economy, as well as the barrel and stock, are epoxy coated for corrosion resistance and lubrication. The color is applied to all parts of the rifle with the exception of the previously mentioned cheek piece, slide rails, hand stock, recoil pad, spacers, and barrel interior. The Sako action is the two lug variety with modified Mauser-Sako type extractor (**Photo 9**). Martin applies specialized moly lubricants to the receiver rails, and even goes so far as to include specialized coatings to the internals of the trigger. This is either epoxy, epoxy-Teflon mix, or Teflon depending of the friction and function of the part. The scope base mount, of Martin's design, is a stout, one piece rail system positioned on the Sako dove tail and mounted with double screwed rings of the Weaver type

The barrel of Martin's rifle is amply floated, and the forearm is flat. Note the front swivel sling mount.

Martin's .308 rifle uses a Model 591 Sako action with heavy mounting rail and rings of the Weaver variety.



The scope rings are secured using 65 inch pounds of torque on the bolts shown.

PHOTO 10

(**Photo 10**). The base on the .308 has a 15 mil pitch while the base on the .300 Win Mag has a 20 mil pitch. Martin uses the same supplied torque wrench to seat the ring screws to the base as well. This configuration allows the use of night vision optics and other devices such as a camera (**Photo 11**) mounted inside a specially designed scope. The Model 591 Sako action is used for the .308, while the Model 691 is used for the .300 Win Mag. The bolt on these actions is lapped, the actions squared, and then disassembled and epoxied inside and out. A special Moly coating is applied to the raceways and lugs during the second epoxy treatment. The bolt is then lapped into the receiver rails until a glass smooth action is obtained.

Martin prefers the Leupold Mark 4, M1 Tactical Scope, and he had provided one in black matte with the rifle that I placed on my rests. I stood while adjusting the focus (**Photo 12**) of the eyepiece and parallax for the 100 distance at which I intended to start shooting. I bore sighted the scope and sat down to begin firing. I stopped myself, realizing that I had no familiarity with the trigger. I let it off a few times, finding it to be light (2.5 pounds) and crisp for a factory trigger. I measured the trigger pull several times, finding it hard to believe that it was as heavy as 2.5 pounds.

Martin handed me several boxes of unfamiliar ammunition and invited me to take my pick. Mmmm, I mused, how would I make a selection? I liked the blue and white box ... blue being my favorite color. The name Lapua jumped out at me. "How about that one ... the pretty blue box," I said, pointing. He handed it to me. I looked back down range and began to be a bit more relaxed. It was a familiar sight: flags wavered

Continued on next page

PHOTO 12

The shooters view of the new Leupold Mark 4, M1 Tactical Scope.

The specially designed Leupold training scope incorporates camera leads.

PHOTO 11

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Continued

languidly, switching from 10 to 2 o'clock, targets on the backboard, the black and white striped mirage board. I looked through the scope. There were dots everywhere ... mil dots. That's nice, I thought, and tried to focus my attention back to the intersection of the crosshairs. OK, I can handle this.

I studied the flags for a few moments, realizing that Martin and his friend, Brian were looking at me and at the target through the scope waiting for the result. Little did they know ... They are used to engaging the target, assessing the condition, and sending the shot. Me, I'm waiting to find the predominant wind. That would take several minutes. When it came, I fired at center mass, hoping to find the bullet and make the adjustment to bring point of impact back to point of aim.

Bang ... left two inches, vertical fine. I held the crosshairs on the original point of aim, and with the rifle secure in the rests, brought the crosshairs to the bullet hole. Somewhere in the rear, I could faintly hear Martin's authoritative voice coming through my ear muffs, muttering something about the time. Guess he was wondering if I intended to shoot today or tomorrow ...

"Two minutes right, quarter minute come-down."

Dots, minutes, mils ... a strange way to describe hold and clicks. Oh well, let him ramble on, I've got a group to shoot and flags to watch. I swung the rifle slightly in the rests until the crosshairs centered a nearby bull. First shot, center bull. That felt good, no unpleasant recoil, no terrible report. The rifle moved straight to the rear, riding the bags like it was made for them. I didn't want to load from the magazine, and found myself fumbling a bit trying to unload and load single rounds by hand. Second shot, center bull cutting the first. Third shot, in the same hole. I was now staring through the scope at a three-shot .122 inch group that was cutting the center of the bull out. I considered quitting right there. I bit my bottom lip and got back in position ... I was getting the typical benchrest jitters. I watched the flags intently, lost in my own technique, unaware of either Martin, his friend, or much of anything else. The forth and fifth shots went into a single hole measuring .077 just above the previous three, expanding the final group to .457. I was impressed. That blue box might be gold. Little did I know ...

Martin handed me another box, this one with Hornady's name adorning the top (this was not Hornady's latest offering for the Tactical Shooter, I later found out). This group didn't fare so well, measuring .985. My curiosity was peaked. I asked him if I could have the pretty blue box again. I extracted another five rounds and let fly. The group once again cut center bull with the first four measuring a nice .297, the final bullet dropping out the bottom for a .587. Martin handed me a second variety of Lapua ammo of some other weight and configuration. This group didn't fare quite as well either, measuring .745. By now the winds had picked up and were switching left to right to a straight tail wind that crossed the line of the flag poles with a vicious flip.

My curiosity was really growing by this time. I asked Martin for the pretty blue box again. This time I tried desperately to hold my concentration through the group. I had changed the settings on the scope slightly for the previous load and didn't bother to bring them back as I got into position to shoot the "pretty blue box" stuff once again. As I shot, the hole did not appear to get any larger through the 10 x Mark 4 Leupold. After the third shot, I could tell that it had a bit of horizontal in it. I finished the group, and we walked forward to assess the final product at close range. The final "pretty blue box" (Lapua 167 grain Scenar) group was a tidy little .267, making the three, five shot groups agg .437, the best of which was shot in some nasty winds.

"Let's move to 400", I boldly suggested.

We did, and placed a steel target below the target frame as well. This handy devise allows the steel target facing the shooter to bounce back to its original position when a hit is made. Why didn't I think of that?

The winds had, by now, gotten difficult to handle. I started on the paper targets. My first round was low; the second shot, after a vertical adjustment, was high. I made a third adjustment and shot three times, aiming approximately 6 inches left to oblige a predominant left to right blow. I had no idea where the bullets were printing since the 10x could not resolve the hole through the mirage ... by now severe. I completed the remainder of the three shot string and looked back at Martin.

"I don't know," he said, looking through the **Leupold variable spotting scope**. "It's mostly haze looking through the mirage, but I think they're in a little cluster at about 4 o'clock, a half minute from center bull."

There he goes again, I thought, combining time with bullet placement. Being the lazy humans that we are, we climbed aboard the pickup and rode the distance to the 400 yard backers. He was right, the last three, after adjusting the scope to target, was in a little cluster measuring about .460.

I next tried the 4 inch metal target from the 400 yard line, hitting it three times in succession, Martin acting as spotter and giving me hold-off commands. The hits proved to be near center with the group appearing to be approximately 1.5 inches.

I was impressed with Martin's rifle. Comfortable and authoritative, it took the targets like it meant it.

We ended that first day talking philosophy, equipment, technical riflery, and Martin's background. He looked at me thoughtfully at one point and explained that he couldn't remember a time that he didn't have a rifle in his hand. At 51, he has been involved with and/or taught courses in the field of firearms for thirty years. He created and runs LOD (Line Of Departure) Training Associates as a natural outgrowth of his many years in the field of firearms training.

Shooting with and talking to Martin was an enjoyable and interesting experience. But my assignment was to extract the capability of his rifle and his program ... his ability to instruct and deliver first shot rifle accuracy on demand, under stress. To do this, I intended to: 1. work with his rifles from a statistical point of view, and 2. attend his training course to see the results of marrying such a tactical rifle system to a sniper team. The results of these evaluations will be the subject of Parts 2 and 3.

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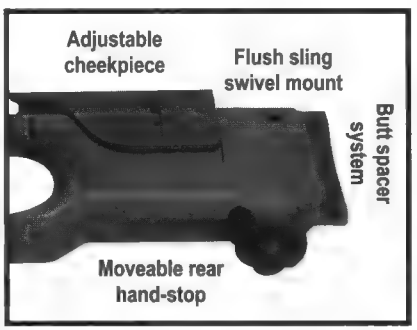

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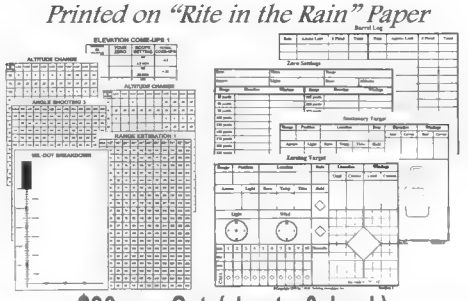

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THIRD TIME AROUN', IN RATON

BY DAVID MARION

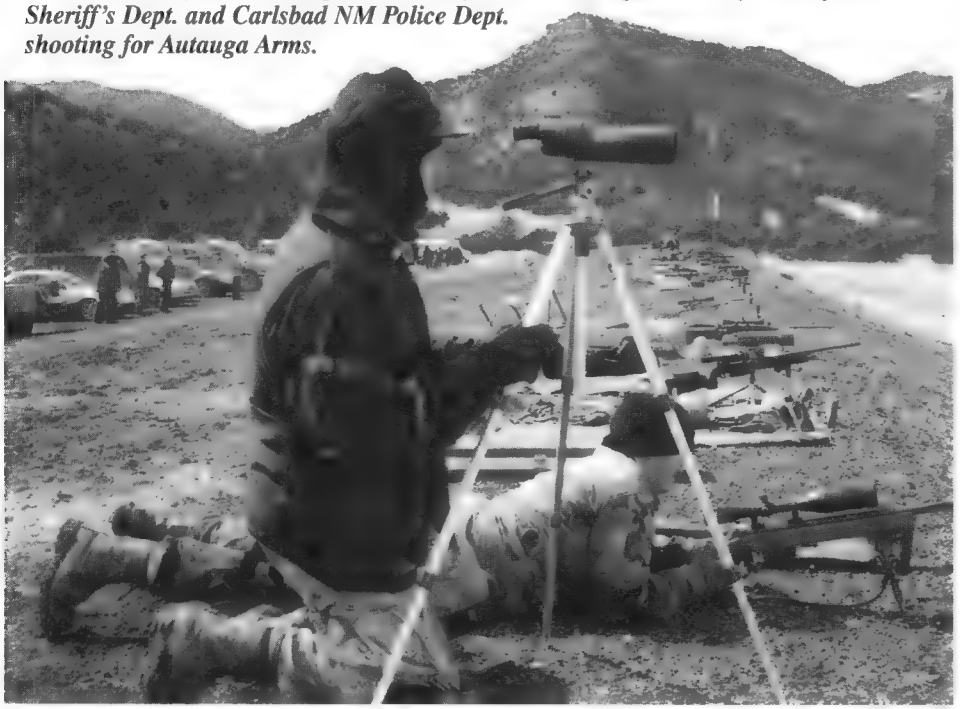
The two grand prizes at the Autauga Shoot... the big trophy, and a rifle utilizing the brand new weapons system from Autauga Arms.

I had the pleasure of covering the second annual Super Sniper Shoot-Out for *Precision Shooting* readers, in an article that appeared in the December 1997 issue of that august publication. Now that the tactical shooters have their own magazine, the report on the Third Annual Super Sniper Shoot-Out (sponsored by Autauga Arms, and held at the incredibly beautiful NRA Whittington Center at Raton, New Mexico in mid-March of 1998) will appear in the newer publication.

Once again military snipers and law enforcement tactical shooters came from all over Europe and the United States to test their skills against their brother professionals, and to establish the pecking order and the bragging rights for the sniper community for another year. I find it interesting, and a bit puzzling, that one or more of the major arms companies have not pounced on this idea, and made a big thing out of it. But they have not, so once again modest-sized Autauga Arms has stepped up to the plate, and said "We'll do it." Thank you, Autauga... somebody had to do it... and I'm glad you did it.

There were a wide variety of weapons on the firing line. Some arms companies sponsor shooters, so these shooters (not surprisingly) shoot the weapons made by their sponsors. But with that aside, virtually all the remaining shooter count have long-held and deep-seated personal preferences and idiosyncrasies... since it is indeed a rare bear of a shooter who does not have unshakable confidence in some old favorite product line... be it barrel, scope, trigger, or whatever. As the poet said so long ago... "Breathes there a man (substitute: shooter) with a soul so dead..." I found myself reflectively contemplating Mauser SR-93s, in .300 Winchester Magnum configuration... the Sig Sauer 3000, and just about everything in between. Autauga Arms had their weapons systems well-represented on the firing line, as did LOD (both TS advertisers, for ease of reference). McMillan stocks were evidenced in abundance, convincing proof of their popularity among the tactical shooting community. The cartridge of choice, by a convincing margin, was the .308, with very few .300 Winchester Magnums to be seen. This year there was a surprising influx of Hornady Match ammunition, an area that previously was almost exclusively the

Lance Ridgeway behind weapon and Stacy McGuire as spotter. Eddy County, NM Sheriff's Dept. and Carlsbad NM Police Dept. shooting for Autauga Arms.



domain of Federal Match Ammunition.

I never cease to be amazed at some of the quarter minute of angle targets at this competition. I am aware that quarter minute targets are ho-hum in top level benchrest competition today. But they're fired by shooters comfortably seated at, and settled into, a bench-stool assembly, with a relatively pip-squeak cartridge, and rigid single-shot actions. Now make the shooter one who has been given minimal preparation time, firing time somewhere between a nanosecond and a flea's eye-blink, put a lot of stress on him (hand him notice of an IRS audit moments before he fires... or perhaps a letter from an old flame, offering to sell him some photos that she thinks his wife would find most interesting)... require properly functioning magazines for the rifle... and make the .308 as the minimum potency round to be considered... and top it off by having him lay in a mud puddle, while the rain falls in varying intensity around him. You get the idea, I'm sure.

It is an unusual person who elects to travel perhaps halfway around the world to participate in such goings-on. On the other hand, unusual persons are required for this job. There are scores of positions in the business world today where people of minimal or no talent BS their way through the workday, and have been doing so for years and years. That is a bit of largesse not available to the tactical shooter. Lives might well be at stake, and this is no place for the uncertain... or the untrained. Mistakes are "*verboten*" in this world, as they must, of necessity, be.

It is a pleasure to watch a master craftsman at the performance of his art... whether it be painting, singing, racecar driving, bull-fighting, or throwing the football into the end zone with three seconds to go and the game on the line. When someone asked Pablo Picasso "What is art?", wise old Pablo responded with a counter-question... "What is not?". I was able to watch some shooting at Raton this year of such a level that had Pablo been on the firing line as an observer, and someone had asked him that same question, I harbor the opinion that Pablo might have responded... "Please be quiet... we're looking at it". Yes, it's always a pleasure to watch a master craftsman at the performance of his art.

What does it take to put on a successful shooting competition for marksmen of this caliber? I believe that it requires a combination of target events that not only challenge a sniper's skill level but also expose his weaknesses. It's just human nature to want to do the things we're good at... sometimes over and over again. Sometimes we don't work as hard as we should at the very things we should be working harder at...namely the areas where we are a little less skilled than we should be. A match of this type goes a long way towards establishing what you're good at, and what you're not good at. Furthermore, it does that in front of a goodly number of your peers... who are not likely to let you forget the lessons learned of the day... any time that you might be inclined to go off on a bit of a tangent sometime, and start thinking that you're pretty good at all this.

Major John Plaster, USA (Ret.) was asked to design "difficult, challenging targets" for the competition. It was the virtually unanimous opinion of the contestants, when the match was ended, that the (censored) had indeed done "just that". When a large number of the competitors are afterwards expressing the wish that you might spend eternity in a singularly warm climate... you are free to feel that you have indeed designed "difficult, challenging targets". It's when they're all trying to buy you a drink that the suspicion lurks that possibly the targets were too easy. Major Plaster was most ably assisted by a range staff composed of Steve Campbell (recently of the Mississippi Bureau of Narcotics, and currently with the Gulfport Police Department), the husband and wife team of Neil and Tery Terry of the Albuquerque Police Department and Department of Energy, respectively. They are snipers, ex-snipers, hunters, and shooters all. Tery Terry, lest anyone mistakenly conclude that they wanted a "token female", is senior weapons instructor for the Department of Energy in New Mexico, and all comments about her, overheard by me during the match, were words of respect for her firearms abilities. Like her male counterparts on the team, she is a person of consequence.

A sniper really should be able to perform effectively under all sorts of weather conditions. That having been said, we were all quite amazed at the way that Major Plaster arranged for weather that varied from clear, cold, and dry to driving rain... blinding snow... mud in varying stages of formation... and all points in between. Quite amazing, really... and rather difficult to do, I would think.

The shooting itself began early Sunday morning, with zeroing of weapons, then known distance-firing from the 100, 200, and 300 yard firing lines. Except for

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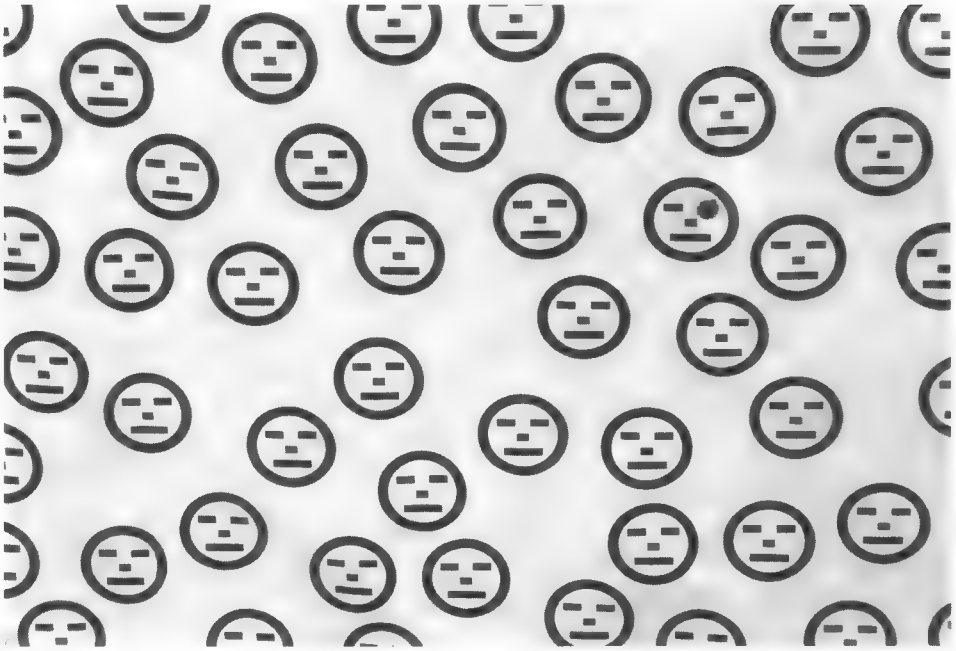
Third Time Aroun' in Raton *Continued*



The new Dazzle target with 31 'Smiley' faces. Correct hit with left eye shot out.

very good scores from the eventual winners, the scores were modest indeed for shooters of this caliber. There are two possible mitigating circumstances... 1) After traveling halfway across the world, one has to get back into synch... and 2) It was raining so hard that by the time we got to the 300 yard line that it virtually destroyed the bank of 300 yard targets. Now that I think more about it... yes, that could have had a bearing on the 300 yard scores all right.

An extremely interesting and challenging event took place right after lunch on Sunday. This was a new "dazzle" target design. It consisted of 131 smiley faces all exactly the same. They were printed on an 11 X 17 target and the event was fired at the 100-yard line from the prone position. However, only one of the smiley faces was the correct intended target. Shooters were given five minutes to get comfortable and find the correct face on the visually confusing target, then at any time over the next half an hour they would be slapped on the leg and given the green light to fire. At this point they had five seconds to re-engage and get their shot off. A hit was worth 50 points, and a miss was worth 0 points. Happily most of the contestants did very well, some even successfully shooting out one eye of the smiley face or the other. These smiley faces were all 1 minute of angle. It was a challenging test of both shooting skills and mental concentration.

What follows here is merely my personal impressions on various parts of the match that followed. I of course first checked with this publication's management, and ascertained that I was allowed to have personal opinions about everything except the Editor. I was told this by the Editor himself, so I guess it's official. Feel free to disagree with my personal opinion... some of you will like blondes, some will prefer brunettes... a good case can be made for each opinion... although obviously not without research. That having been said...

Night firing: Always interesting, it gives everyone a good chance to freeze their feet and other body parts. Other than that, I honestly don't see a whole lot of reasons to hold these events. Human vision is limited at night and sniping calls for extreme accuracy and stealth. Regardless of my personal feelings about the relative value of night sniping events, the events were held and they were also interesting and, of course, difficult. The individual event was fired from the 200-yard line at the same target used on the 300-yard line known distance slow fire. Two black bulls on a single target, three rounds in one bull and two in the other. Lighting for the event was a highway flare for each target. If you have never seen it, it is simply amazing how much light a flare provides, even when lying on the ground in front of a target. Scoring was a maximum of 10 points per shot for 50 potential points. Not surprisingly, most of the shooters did very well indeed, although there were a few who obviously need more work on their night firing technique.

The Team night event was even more difficult. The same target was used on the

Gerd (Rex) Kramer from the Dortmund, Germany PD with his Mauser SR-93 .300 Win-Mag and Steve Campbell-Line Coach, Autauga Staff.

300-yard known distance, but this event was fired from the 100-yard line and each team member was given only two shots and also given only two seconds of illumination from a flash light. The maximum possible score for this event was only 40 points. I was very surprised to note that the Police teams scored much higher on this event than the Military teams. I also haven't a clue as to why this was so. It should be noted, however, that the Police and the Military, either individually or as a team, do not compete against each other except for the Top Gun Trophy.

Two events that I completely missed out on last year at this same shoot-out are the Movers, or moving targets fired from a 300-yard line, and the Snappers, or Short Exposure targets fired from the 200-yard line. Last year I was covering two other events that ran simultaneously with these events.

The Moving Target Event: Competitors were given the choice of firing from the Sitting, Standing, or Kneeling position. Each shooter had five shooting opportunities, one shot for each opportunity. Exposure time was dictated by how long it took to walk the moving target from one side of the window to the other. The targets themselves were reduced-size silhouette targets. This event was a hit/miss event with 10 points per hit for a maximum of 50 points.

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The Short Exposure Event: Once again, shooters were given their choice of positions: Sitting, Standing, or Kneeling. However, for this event the shooter must start in the Standing position, and when his target appears he must choose his firing position with only five seconds to get his shot off. The wind was blowing briskly from the West and apparently this caused problems for many of the shooters. As this was another hit/miss event there were many that recorded no scores at all even though they managed to have nice tight shot groups.

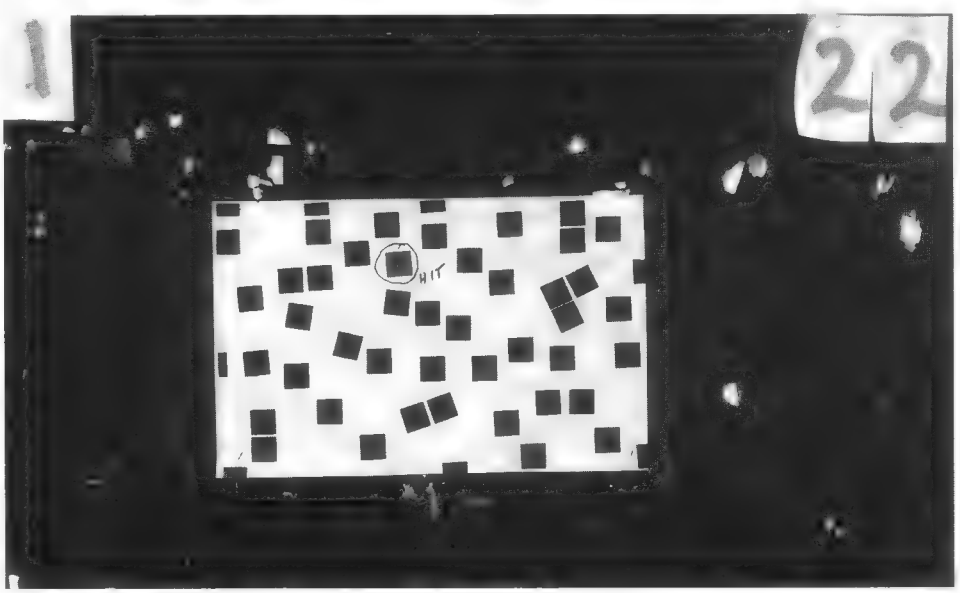
I had a discussion with former Marine Sgt. Chuck Mawhinney about the Short Exposure Event. I learned that yes, indeed, many shooters mis-read the wind. Chuck explained to me that though they read the wind they read it only on the firing line, and ignore the wind at the target line. The difference between the two caused the shot groups to be high and to the right.

Next on the day's firing schedule was a team event that severely tests the ability of the spotter to talk the shooter onto the correct target. This course utilizes a target that was introduced at last year's competition. The event is fired from the 100-yard line, and utilizes a special 11 x 17-inch target with forty black one-inch pasters displayed. The sniper has only one round. His target is the extra black paster that has been added to the target, his spotter must locate and talk the sniper into the correct paster under the pressure of time—not nearly as easy as you might think. The team from the Mississippi Bureau of Narcotics turned in the best score for this event with the remarkable time of only 43 seconds. At least it was remarkable to my eyes, I just happened to be standing right behind this team when they fired.

The Simultaneous Engagement Exercise also proved to be an extremely difficult event. This was a team event and was fired from the 100-yard line at a 25 X 19 inch target containing four real sized human faces. Two of the faces are hostages and two are perpetrators. A fine line outlined part of a 3 X 5 inch box on each of the perpetrator's faces; if a shot was outside of this line no points were awarded. Both the sniper and the spotter have only one round in hand. Starting from 25 yards behind the firing line their time starts when the line officer give them a "Go". Both must run to the firing line, load their round, and shoot a perpetrator. The time stops when they run back to their starting point. Just to give you some idea how difficult it was to see this fine line on the perpetrator's faces... when Major Plaster was explaining the course of fire to the line officers, scorers, and Autauga staff in his hotel room, I was sitting on the floor less than 12 feet away from this target. I couldn't see this line until I got within 3 feet of the target. Of course it must be understood I do not have shooters' eyes anymore. But even so...

Continued on next page

Target Detection Event — Special target design using 41 black paster's only one of which is correct target. Testing spotters ability to talk sniper into correct target.



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Third Time Aroun' in Raton *Continued*

Hostage Rescue Target — One of five out of 26 targets fired on successfully. This was Lance Ridgeway and Stacy McGuire's target. They are from the Eddy County, NM Sheriff's Dept. and the Carlsbad, NM PD respectively.

By far the most difficult team event was the Hostage Rescue Exercise. This event was fired from the 300-yard line at a 24 X 19 inch target containing five real-size human faces. Only one of these five faces corresponded with a 3 X 5 inch "mug shot" of the suspect. A timed event that began 25-yards behind the firing line with the sniper and spotter standing back to back, time starts when the line officer hands the "mug shot" to the spotter. The spotter must memorize the face, slap his sniper on the shoulder and both run to within 10 yards of the firing line where another line officer gives the sniper one round. Both must then low-crawl to the firing line where the sniper locks and loads his round, while the spotter ID's the correct face on the target and identifies it for the sniper, who fires his weapon. Clearing the weapon, both jump up, run back to the starting point and the time stops. To score any points at all the shot must hit within a 3 X 5 inch box overlapping the suspect's eyes. This event was so difficult that out of 26 teams competing only five scored any points at all.

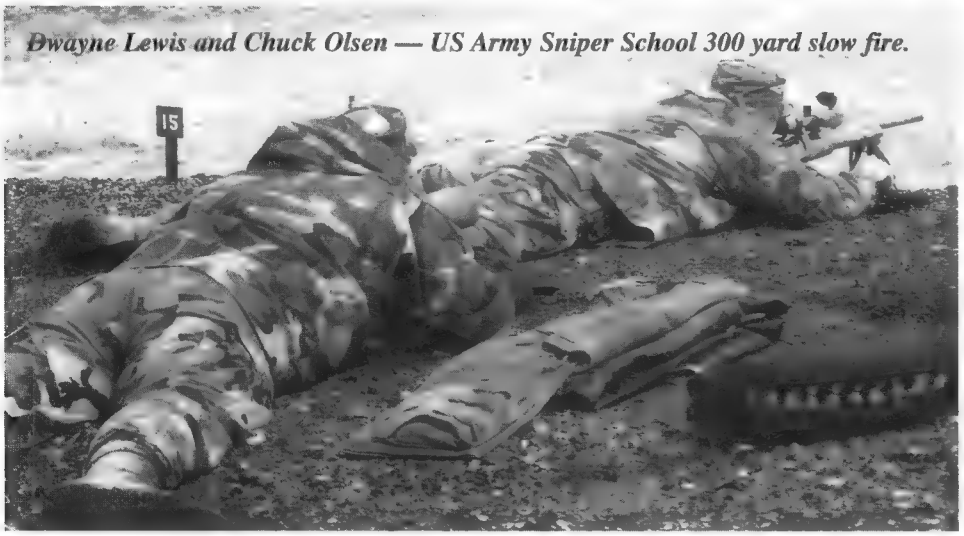
Remember way back in the beginning when I was explaining what I believe it takes to make a successful shoot? Well, I talked about most of the factors except for one: the scorers. The chief scorer for this shoot-out was none other than former Marine Sgt. and Scout/Sniper Icon of the Vietnam War, Chuck Mawhinney; he was of course ably assisted by other folks.

Chuck Mawhinney is an example of the very best this country has to offer. A quiet man, a modest man, a man of family, a man who seldom speaks, but when he does he speaks from the heart. It has not been my privilege to meet retired Marine Gysgt. Carlos Hathcock, yet I imagine he must be much the same as Chuck Mawhinney; men of this caliber always seem to have great similarities in their lives.

Was the Shoot-out a success? YES. Were there problems? Again, YES. Any complex human event always experiences problems. The only reason for the existence of problems is for humans to overcome them. The problems occurring during the shoot were solved and it is unlikely that they will reappear again.

The Top Gun Award this year was a brand new weapons system that Autauga Arms will be featuring. It incorporates a UARS stock designed by Innovative Design and Engineering in conjunction

Dave Emery — National Guard (Eventual Top Gun Winner) 300 yard slow fire.



Dwayne Lewis and Chuck Olsen — US Army Sniper School 300 yard slow fire.

Tim Webber and Emil Praslick — US Army 300 yard slow fire.

with Autauga, Gunsite Training, and Major John Plaster. The UARS incorporates an aluminum rail and unique stock that any shooter can install in about 20 minutes using just ordinary tools. When installed on a high end bolt gun it produced astonishing 16% tighter average shot groups. This weapon also had a Remington 700 action, a Douglas stainless barrel, a Remington trigger, a Leupold 4.5-14 X 40 mildot reticule scope, Advanced Systems tactical rifle sling and a Harris bipod. A beautiful looking weapon, I might add.

This year's winners are:
Dave Emery **"Top Gun"**.

Individual Military:
1st Place
Dave Emery, Army National Guard
2nd Place
Mike Deger, Army National Guard
3rd Place
Emil Praslick, U S Army

Military Teams:
1st Place
Tim Webber and Emil Praslick, U S Army
2nd Place
Petr Marek and Pavel Vanecek, Czech Army
3rd Place
Tom Brewer and Wayne Morgan, Army National Guard.

Individual Police:
1st Place
Eddie Pocock, Southington, CT PD

Continued on next page

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Third Time Aroun' in Raton

Continued

2nd Place
Rich Tillery, Sheridan, WY PD SRT
3rd Place
Wade Parham, MS Bureau of Narcotics.

Police Teams:
1st Place
Wade Parham and Sam Owens,
MS Bureau of Narcotics
and
Eddie Pocock and Rich Sargent,
Southington CT PD
3rd Place
Jim Swanson and Allan Swanson,
US Dept of Energy (father and son team).

No 2nd Place awarded because of a tied score and no way to break the tie.

On behalf of the Match host, Autauga Arms, thanks to the many shooters who traveled substantial distances to be with us. And on behalf of the shooters, to Autauga Arms... Thanks for inviting us.

Michael Sandfort — Natrona County Sheriff's Dept. — 200 yard line-moving targets. Mike is an excellent offhand shooter.

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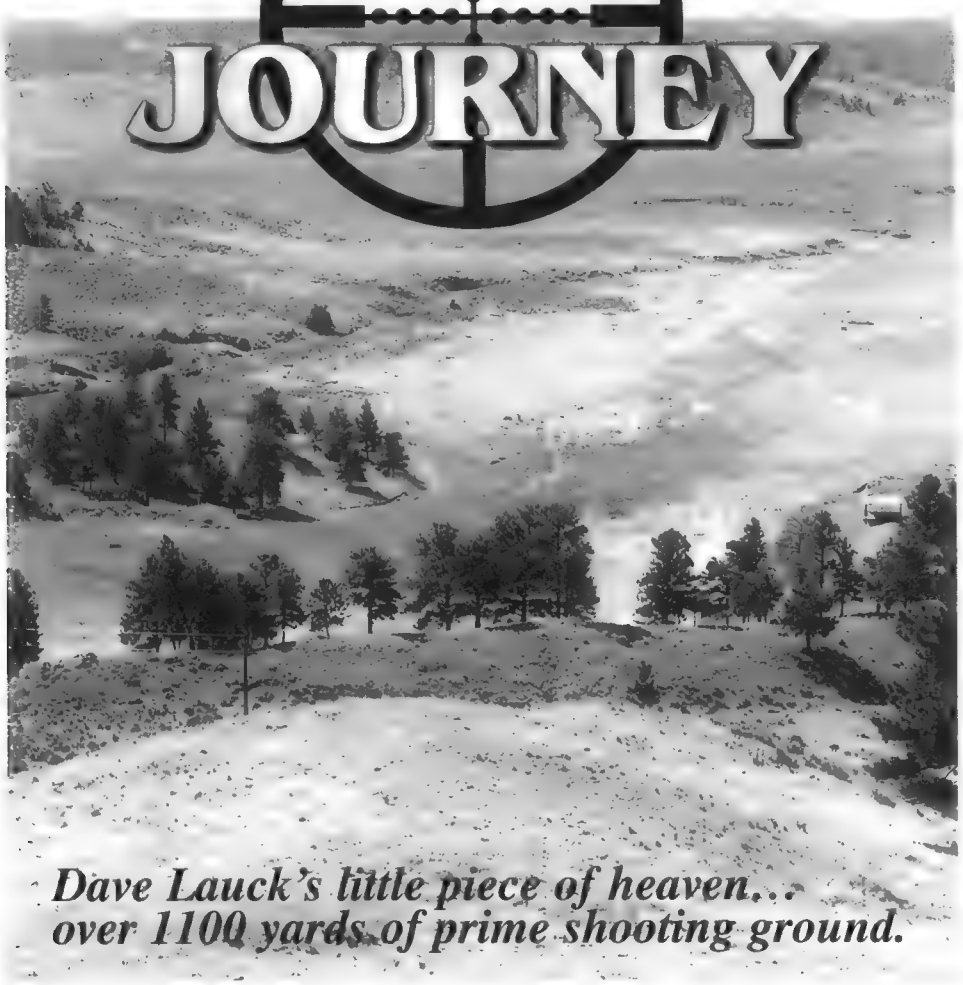
A Profile of Dave Lauck, his Small Arms Training Academy, and D&L's Tactical Shooting Events in 1998

A TACTICAL JOURNEY



Dave Lauck's little piece of heaven... over 1100 yards of prime shooting ground.

BY JOHN DUSTIN

When Dave Lauck went in search of some land, he knew what he was looking for: a big piece of level ground, and an even bigger chunk of billy-goat country; a wide-open patch good for shooting at 1000 yards or more, and some timber land for close-in tactical maneuvers; enough water for modest domestic use and sufficient to serve the needs of the local wildlife population. The thing was, it had to be affordable enough to fit within his limited budget, handsome enough to attract long-term investors interested in a rural getaway location, and (perhaps most importantly) a "fur piece from any persnickety neighbors." You see, Dave knew, beyond any shadow of a doubt, that he would establish on this land a firearms training academy, one that would be renowned among tactical rifle practitioners throughout North America and beyond.

He found it 45 minutes north of Gillette, Wyoming... 720 acres on the western cusp of Black Hills country, elevation just over 4000 feet. An east-facing valley constitutes the property's southern portion, with parallel timbered ridges both north and south. From the valley road, a clear sight line of over 1200 yards is available, terminating in a hillside cove—the perfect spot for a bank of targets. Two perennial ponds dot the property's upper portions, auguring well for downstream groundwater. Timbered gullies and side-ridges rise to the north, providing an ideal setting for cross-country tactical courses. Dave figured he was home, and made the deal.

Fast-forward 11 years. Some noteworthy improvements are clearly in evidence. There's the handsome steel entrance feature, announcing (in code) that this is indeed The Place. A capacious steel building for classroom use is situated about a quarter mile in from the road. To your right as you enter is the 1000 yard shooting bench, while target standards come into view against a distant hillside. A more elaborate steel building is nestled into the timber's edge; this contains comfortable lodging quarters, a reloading room, and range storage. Some recently-delivered log cabins have sprouted to the west...these will be available at a modest cost for daily or weekly rentals.

Dave knows that he's ready for a major tactical match. He's been conducting extensive training courses here for some time now; his clientele has included many police departments and agencies such as the FBI. As for matches, he got his feet wet in 1997, providing the venue for the inaugural Proskopathlon™. He'll go it alone in 1998, acting as both host and organizer for a trio of matches, in addition to his regular schedule of tactical courses.

The centerpiece competition is the 1998 Tactical Marksman's Match, composed of several courses of fire over three days, and involving both rifle and pistol shooting problems. The maximum range for pistols will be 25 yards, while the bulk of the rifle work will be from 600 yards in. A few shots of up to 1000 yards will be included "just for fun". Some courses of fire will involve covering ground to a variety of shooting stations, with no more than two miles of hoofing per course. Competitors must fire at each target at least once, and a hit will earn 10 points. The bad news is that a miss will cost 20 points! It is obvious that this match (appropriately) places a premium on first-shot hits.

The first of the side matches will be the Carlos Hathcock Benefit Match, with

Continued on next page

A Tactical Journey

Continued

proceeds going to Carlos' medical fund. This is a static event, involving no cross-country work at all; if you can walk, crawl, or stagger to the firing line, you can shoot this event. This match will be a "one-on-one" double or triple elimination event, firing on a series of steel targets up to 500 yards, with the first shooter to hit all targets advancing in the winners' category. This match will be an honest test of wind-doping and range estimation, in addition to field shooting skills.

Proving once again that imitation is the sincerest form of flattery (and with a tip of the hat to North Carolina), Dave has added a second side-match... the Wyoming version of the now-fabled Egg Shoot. This will be one shot at an egg-sized target at 500 yards, with all those scoring a hit moving into a shoot-off. Again, for the less motivated among us, this involves no hiking. As with the Hathcock, you must shoot the rifle you use in the Tactical Marksman's Match, but these side-matches are strictly optional at the shooter's discretion.

All of this transpires August 21–23, 1998. For those wanting some range time, August 20 is an open range day...shoot anything you brought at any range you desire. Not enough shooting for you? Then enroll in Dave's Precision Rifle Course August 17–19 or 14–16.

A generous variety of trophies and prizes will be offered, including 8 trophies (co-sponsored by Tactical Shooter), several custom rifles, and a variety of custom products and accessories. One of Dave's magnificent, prize-winning .45's will be the Golden Egg Shoot's grand prize.

It goes without saying that none of the foregoing would have come to pass without the firm hand of Mr. Lauck on the tiller, and a ton of old-fashioned "sweat equity." Dave's journey to a pre-eminent position in the world of tactical shooting was a complex and interesting one.

He grew up in Los Angeles, before the notion of political correctness had made its way into our urban consciousness, and before reaching the age of 10 he was accompanying the family's menfolk on hunting expeditions. His nascent love of field sports took a giant leap forward when the family moved to Montana during his teen years. Living in several towns throughout the state, Dave had the opportunity to practice his avocation on virtually a year-round basis. His shooting was limited only by the constraints of his ammunition budget, which were substantial. He recalls that expending more rounds than he bagged critters "was damn near considered a failure." As he approached college age, his hobby became his means of support. His subsequent years of formal education were paid for by fur hunting, mostly at night, much of it accomplished with a .45 auto and a trusty pack of dogs. His primary quarry was raccoons, but badgers, coyotes, fox, and bobcat were also on the list.

In the late 1970's, a career in law enforcement beckoned. His shooting ability had been noticed by senior officers in positions of authority, and he entered the police academy fully intending to serve eventually as a tactical shooting specialist.

The Golden Egg Shoot's grand prize — one of D&L's benchmark .45's.

Dave Lauck on the trail with one of his gas guns.

Dave's law enforcement career continues to this day, in addition to the many hours spent as a trainer and armorer. His characteristic modesty prohibits him from talking much about his service as a tactical officer; suffice it to say that, no matter the demanding nature of the assignments put upon him, his finely honed skills have carried him to universal success in a number of incidents throughout the northwestern U.S.

His demanding schedule has not kept him from top-level competition in the tactical field; an abbreviated overview of his competitive achievements include the following:

- won the S.A.A. countersniper shootoff in 1987;
- won the 1986 South Dakota 2-gun combat police match.
- won the NRA 600 yard countersniper match in 1988;
- won the S.O.F. tactical rifle event in 1990;
- served as Captain of the S.O.F. team in 1991;

Dave Lauck's new aluminum-stocked tactical rifle.

If all this were not enough, Dave has achieved remarkable stature in the custom gunsmithing field. His older brother, college-educated in machining & industrial fabrication (and now an FBI member), taught him the basics of machine work, and then Dave was off to the races under his own steam. He routinely works on a broad range of firearms, from 870 riot guns to hunters' sporting rifles, but his favorites are the Remington 700, Armalite-type gas guns, and the Colt 1911 and its derivatives. A large part of his business revolves around these three, including camo-teflon finished tactical rifles in both bolt-action and semi-auto. His motto in putting these together is

Continued on next page

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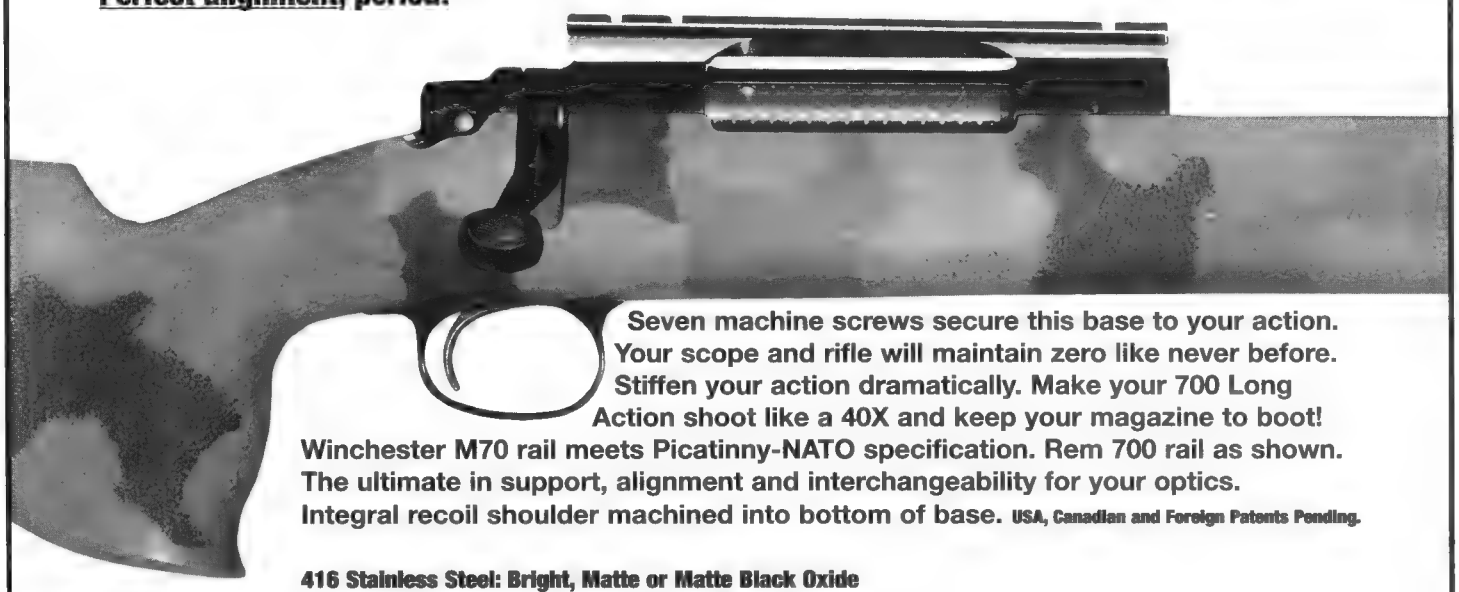

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A Tactical Journey

Continued

"plan it as strong as you'll ever need it, then build it twice as tough." His work has achieved high recognition, including several magazine covers, the Excellence in Craft award from the American Gunsmithing Association, and designation as one of the top 5 pistolsmiths in the nation.

His newest initiative in this field is an aluminum-stocked tactical bolt gun, built along the lines of a "rail gun," but adaptable to a diversity of field situations (see attached photo). These have as standard features a stock adjustable for length of pull, cheek piece height, and weight; dual reversible bipods; rigid "block" mounting of both barrel and receiver; a point-of-balance carrying handle that also serves as a scope guard; and a built-in adjustable rear pedestal for precise elevation control from prone. These rifles tend towards the heavy side, from as little as 12 pounds on up to over 40, depending on the shooter's needs. They are the closest thing I've ever seen to a personal small-arms artillery piece.

It is this incredible diversity of experience within a defined field of endeavor that has shaped D&L Sports' Small Arms Training Academy. I had a chance to visit the facility this Spring, and can honestly say that there is no plausible tactical scenario that cannot be well-simulated on these premises, including intra-structural exercises. I had a chance to do a limited amount of shooting during my visit, including some tactical problems of the cross-country variety, typical of those Dave provides during his training courses. I fired at ranges between 30 and 500 yards, from all positions. An incredible array of shooting problems were encountered, and I was fully involved mentally every moment, unlike a typical static course of fire. You can bet I'll tweak my schedule in every possible way in order to attend the matches this August.

Those interested in any of the listed events should contact:

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Correspondent John Dustin engages a target at D&L's Small Arms Training Academy.

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1998 Groundhog & Hickory Egg Shoot

1998 Ground Hog Shoot Champion Jerry Land, complete with a $500.00 check, Mr. Ground Hog, and a winner's smile. He set a new 80 point record score with a Clay Spencer built .22-250 rifle with a 1 in 9 twist Hart barrel, sleeved 40X action, Jewell trigger, McMillan stock, and he fired 69 grain bullets at 100 yards, and 80 grain Sierra bullets at 300 and 500 yards, all moly-coated.

His winning target is shown on the right.

BY DR. RICHARD MARETZO
(Photos by Dr. Richard Maretzo and Henry Ford)

After more than a decade dealing with our beloved (?) Editor... I can usually tell when I'm being "set up". Thus, when I took his phone call in early March, and was told there were conflicting events on the first weekend in April... and *Precision Shooting* and *Tactical Shooter* really should be officially represented at both... I could have saved a lot of time and discussion if I had simply asked him which of the two he wanted me at. One was the Hickory match, which has always been an important event to us here at PS. The other was a gathering of Fort Henry (Wheeling, West Virginia) and Wetzel historians and authorities at Wheeling, on the same weekend. Since PS will be publishing a darn interesting book on the Border Wars (and Fort Henry was the epicenter of the Eastern Frontier's Border Wars) in the late fall of this year, authored by noted historian of the era, Bill Hintzen... there was a halfway logical school of thought that we really should be represented here. As I said earlier here, I really should simply have asked where he wanted me to go. But no... I had to discuss it. I ended up in Hickory, and I knew at the start that I was going to end up in Hickory, and he was going to Wheeling. So why did I have to discuss it, anyway? Well, so much for my feelings of persecution.

Some of the readers of *Tactical Shooter* who have not been long-time readers of the parent magazine probably do not have the foggiest idea what the heck this match is all about. Oddly enough, in an out-of-the-way, off-the-beaten-path area of west central North Carolina... once a year they host what many of us believe is the best practical test of in-the-field tactical shooting to be found in the country today. It's not complicated, it does not require a decathlon winner background for the competitors, a Cray mainframe computer is not needed for the scoring... but if you think it's possibly too easy for a hawkeye like yourself... well, a true possible is a 135 score... and the all-time record there is an 80... which, for the mathematical types, indicates that we are at just about 60 per cent of perfection in the year 1998. It would seem that we yet have a ways to go here...

How best to describe the rules of the match? I can think of several rifle accuracy disciplines where the pages of their rule book go on and on. The people at Hickory believe in keeping it simple. (May their tribe increase! But it probably won't). The match is fired from the prone position (although you have a God-given and Constitutionally-confirmed right to shoot it offhand, if you really insist). The firing points are covered, and out of the elements, (although Divine Providence and the weatherman have been most kind with the weekend of the Hickory shoot in recent years). The firing line accommodates ten shooters, and shooters there for the first time never cease to marvel at the efficiency with which Larry Willis (the honcho and the patron of the Hickory shoot) and his crew run the match. You

Continued on next page

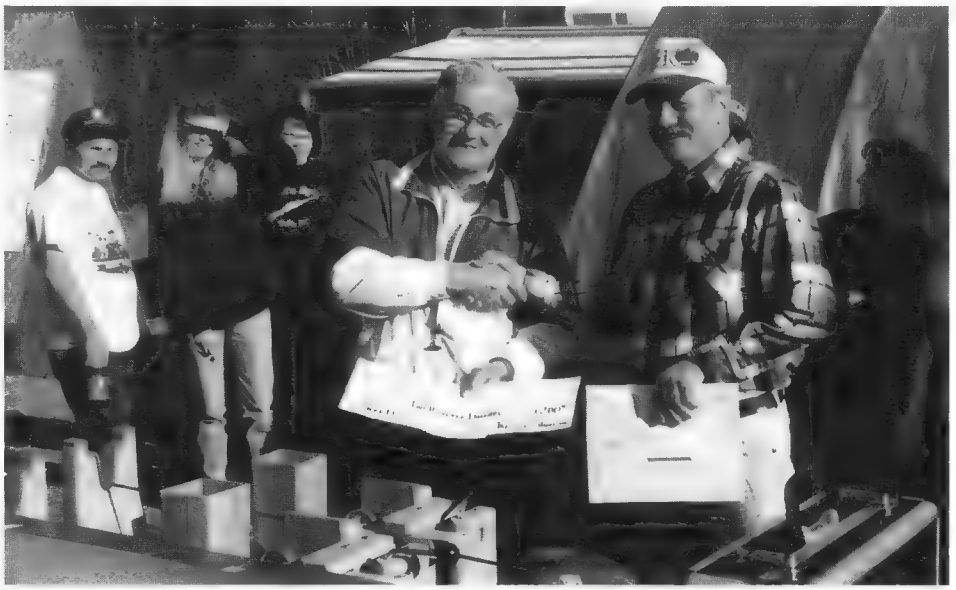
The 1998 Groundhog and Egg Shoot

Continued

can select from a number of permitted styles of shooting: prone with sling... prone with benchrest-type front pedestal and sandbag, plus rear sandbag... or front bipod and rear sandbag (optional at shooter's election). You will not have time to dig a foxhole, so forget that one. You are allowed neither sighting shots nor fouling shots... thereby giving tremendous importance to "sniper's zero" (first shot from a clean, cold bore) as well as knowing the click adjustments exactly for the two range changes. In the Ground Hog Match (which is the event of the day)... you get three shots at a ground hog target at 100 yards... three shots at that same ground hog target at 300 yards... and finally three shots at the ground hog target at 500 yards... total of nine, I do believe.

There are two sets of scoring rings superimposed on the ground hog silhouette. The smaller target, with the higher value scoring rings (15 is maximum possible score for a shot... 45 is a "possible" for a single distance) is superimposed on the ground hog's head. The larger target, with the less value scoring rings (10 is maximum for a bulls eye) is superimposed on the ground hog's body. Theoretically... a 135 score is a pure possible... but note that the word is underlined. In the real world, almost everyone shoots at the smaller bulls eye at 100 yards... and then, at the two longer distances, there is a reality check, and everyone switches to the bigger bullseye. Working with this pragmatic approach, a 45 is possible at 100 yards, 30 is possible at 300 yards, and 30 is possible at 500 yards... total of 105. As an aside.. any shot that hits the ground hog's body, outside of the scoring rings, scores a 1. As I related earlier here, a true possible at Hickory would be a 135 score... a "real. world" possible is 105... and the record at Hickory is 80... which means that many of the best shooters in the Eastern US have not yet made it to 80 per cent of even the "real world" possible. There are absolutely no restrictions on sighting equipment at Hickory... 36X benchrest scopes are all over the place, as are 36 powers bumped all the way to 50X and 60X. The Varmint shooters lean

Jamie Anderson - a mere one point behind the overall winner, good for second place, and $300 richer.



Bob Crone, the 500 yard terror, third place winner, and $200 richer.

toward their familiar 6.5 X 20 and 12 X 40 models, although some switch to 36X models for this match. Rifle caliber selection is certainly catholic in outlook. Up to three or four years ago the back-to-the-wall large capacity wildcats, such as the 6 X 284, the 6MM Ackley Improved, the .22-250 Improved, and toss in a good-sized smattering of 300 Weatherby and 300 Winchester Magnums... and they tended to rule the roost at Hickory. Then, in 1995, Benchrest Hall of Fame member and noted accuracy gunsmith Jim Borden went to Hickory, and won the whole thing with a 6 PPC, and stood the Hickory gang's cartridge selection philosophy on its ear... heck, everybody knew that a 6 PPC was marginal, real marginal at 300 yards, and sadly lacking in boiler room capacity for any 500 yard aspirations one might secretly harbor deep in their bosom. So much for that theory... Jim Borden simply blew it away in convincing fashion. Another 6 PPC was to win it in 1996, in the hands of Barry Jolly. In 1997 a 6 BR won the grand prize, fired by Harold Seagraves; indeed that year the first eight shooters in the final standings fired either a 6 PPC or a 6 BR. Just as it looked as though a dynasty was shaping up at Hickory for the 6 PPC and the 6 BR... this year (1998), to get ahead of myself a bit... the top five places (in order) were carried off by a: 1) 22-250, 2) 22 PPC, 3) 308, 4) 6 Ackley, and 5) 308. So much for that dynasty! It seems, at Hickory, it's not so much *what* you brought, it's how you steer it! As I look further at the 1998 final results, there's a 7MM Mag in 8th place, and a 6.5-06 in 10th place. Last year a .50 caliber shooter showed up with a monster from LAR Manufacturing... and one thing was for certain... the darn thing made *big* holes in that ground hog target! All right, so much for background "color", and an overview of the sparse (albeit sensible) rules at the Hickory shoot. Without exception, in my experience, if you show up at Hickory... regardless of race, color, creed, gender, Billly Yank or Johnny Reb... you will be made welcome. This year, when *Precision Shooting* and *Tactical Shooter* announced that they would supplement the already generous prize -giveaways from Larry Willis by a contribution of $1000 cash ($500 to first place, $300 to second place, $200 to third place)... the entry list swelled to 258 shooters on line

Facing the camera - Dave Tooley, 1000 yard gunsmith par excellence. Back to the camera - Bill Shehane, 1000 yard shooter par excellence. Occasionally struggles at shorter distances (today, for instance).

for the match. This is no small little "local" match... if you come out of the Hickory shoot as topgun... friend, you *earned* the honor! I'm guessing we'll see 300 shooters for the 1999 shoot, since our Editor has already committed himself to putting up that additional one thousand dollars prize money. There were a raft of supplemental prizes this year. There simply is not enough room for me to list them all here... but I would like to list, in no particular order, the very generous prize contributors... there were literally thousands of dollars worth of merchandise prizes awarded to lucky winners at match end... Remington, Omega, Six Enterprises, Nightforce, Berger Bullets, Rivervue Sports, Lilja Barrels, Shilen Rifles,

Continued on next page

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The 1998 Groundhog and Egg Shoot

Continued

Springs Road Shooting Range, Hart Rifle Barrels, Redding Reloading Equipment, McMillan stocks, Clarke Gun Cases, Blackstar Accu Max Barrels, Midway, Scoplevel, Benzomatic, Simmons Scopes, Leupold, and Hornady. Since the entry fee is all of $15.00, it's got to be one of the most shooter-friendly matches in the country today!

1998 Match, 100 Yards.

With 258 shooters on line, 17 of them shot "possible" scores of 45. There's no way that I am going to tackle listing all 17 names, but it is "basic stuff" at Hickory that if you aspire to win the top honors there, you had better tee off on the 100 yard stage, and max it. I was standing there afterwards, at the awards ceremony, feeling generally pleased with myself (no particular reason... the sun was out, I was enjoying the company...) when Henry Ford (who covered the reporting for our sister publication *Precision Shooting*) wandered by, and casually reminded me that two pretty females (Jamie Anderson and Crystal Jones) had each maxed the 100 yard stage with perfect 45's (I agreed)... and then he laid the bombshell on me... You do recall the Editor's little peccadillo, don't you? Heaven help the reporter who covers a rifle match where a pretty female shoots well, and he does not get a photo of her to include with the article. You do recall your *PS Reporter Survival Class 101, don't you?* I got that funny feeling that you get when someone walks on your grave. I already had a photo of Jamie, but I didn't have a photo of Crystal... I was as good as dead... because I was out of film. I ended up with Henry promising to send me a Crystal photo for this report, and hopefully the Editor will never know. It would have meant certain banishment...

At 300 Yards.

Now we enter the world of planning, plotting, and scheming... do you try for the higher points to be had by shooting at the bulls eye superimposed on the ground hog's head (with a 45 possible)... or do you accept your mere-human limitations... and shoot for the larger target (30

Continued on page 32

The registration desk and stat crew desk. Note the egg displayed on the pole at right, for the benefit of the city types who might be unfamiliar with what one really looks like. The lady at the right has been told that our photographer is from a "high-powered New York City tabloid". All our photographers tell tall tales, unfortunately.

The Kitchen crew. They kept more people fed on this Saturday than an average UN Relief Mission. One way or another Larry Willis always comes up with some pretty ladies helping out.

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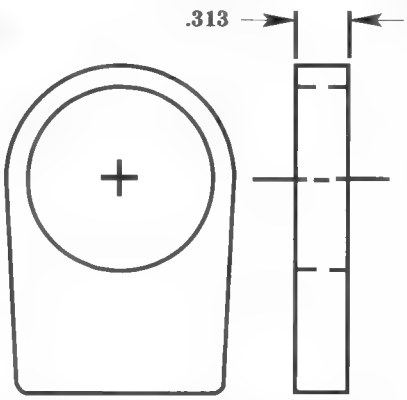

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Man-o-man, if we have actually been able to accomplish those things, why... why, how could we hope for more?"

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Bring on that egg. The ten omelet makers. (Anybody can make an omelet; but try it at 500 yards...) for 1998 (L to R): Steve Wilkins, Ron Bailey Sr., Gary T. Blalock, Lynn Dingler, Cody Ledford (13 years old), Jimmy Harris, Larry E. Jones, Tom Goodman, Max Banks, Dusty Cabiness.

The 1998 Groundhog and Egg Shoot

Continued

possible score) superimposed on the ground hog's body? The all-time record at Hickory is a 34, fired by Jim Fox in 1996 (and that score level indicates that he was going after the smaller target). This year the 300 yard stage was won by Jerry Land, with a 30 score (the three shots, all cleanly in the center bullseye, measured well under three quarters of an inch. Not bad shooting!) Seven shooters tied with identical 26 point scores for second place: Jim Fox, Jim Harris, Tom Long, Jeff Ferguson, Michael Byers, Jeff Hullander, and Phillip Barnett.

And now, all the way out there at 500 Yards.

If you had a match strategy all lined up of keeping a low profile at 100 and 300 yards, and then demolishing the field at 500 yards, and chuckling your way up to the trophy table... well, it's time for you to double-clutch, downshift, and drop the hammer... they just put the target frames up at the 500 yard markers. A small... very small... percentage of the shooters on the Hickory grounds may be heard saying (at the start of the day) that they plan on shooting the smaller (head) bullseye for the whole course of fire. When the targets go back to the 300 yard line, this philosophy becomes downright scarce, and when the targets get set up at 500 yards, and the shooters get a chance to: A) take a look at them, and B) reflect a bit on the uncertainty of the human experience in general, and long range shooting in particular... well, nobody elects to shoot for the head target at 500 yards... the brave words uttered at 8:00 am notwithstanding. The record score at Hickory for 500 yards is the 24 figure turned in by Gene Walker in 1996. This year Bob Crone's score of 20 was good enough to take the 500 yard award, and Bill Cherry claimed second place with his 18 score. Five shooters tied for third place, with identical 17 scores: Michael Ledford, Ron Bailey Jr., Mark Reese, Robert Cross and Rodney Clarke).

And now, the Overall Champion. The envelope, please.

Jerry Land of Falls Church, Virginia, shooting a 22-250 from the shop of PS/TS advertiser Clay Spencer put together an 80 score in almost classic fashion (for those who spend a lot of time theorizing about the ideal/classic formula at Hickory). He maxed the 100 yard stage with a 45. Then, using the "real world" approach, he maxed the 300 yard stage with a 30... and then struggled a bit at the 500 yard stage with a score of 5... but the 80 figure was good enough (albeit just barely). One of those attractive

(L) Del Caulkin and (R) Lance Hicks, who traveled to the shoot from Ramsey Outdoor Sports, in New Jersey.

females, Jamie Anderson, was incredibly close behind him, with a 79 score (and that is indeed cutting it close, Mr. Land). Jamie maxed the 100 yard stage with a 45, had a 23 score at 300 yards, and an 11 score at 500 yards. Jamie shot a 22 PPC, which any fool can tell you simply will not shoot worth a darn at 500 yards, and probably not at 300 yards either. In third place, with a 77 score, was Bob Crone, with a plain vanilla .308. Bob shot a 39 score at 100 yards, an 18 score at 300 yards, and then popped up a range-winning score of 20 at 500 yards, for a total of 77.

1998
GROUND HOG
18TH ANNUAL TOP-TEN GRAND AGGREGATE WINNERS
258 ENTRIES

Place	Name	Rifle Caliber	100	300	500	Total Score
1st	Jerry Land	22-250	45	30	5	80
2nd	Jamie Anderson	22-PPC	45	23	11	79
3rd	Bob Crone	308	39	18	20	77
4th	Steve Jordan	6 Ack.	39	24	12	75
5th	Wayne Shaw	308	45	20	6	71
6th	Harold Seagraves	6 BR	45	24	1	70
	Barry Jolly	6 PPC	45	23	2	70
7th	Mark Reese	6 BR	32	20	17	69
8th	Mark Stock	7 MM Mag.	38	25	5	68
9th	Glenn Shelton(*)	6 BR	45	16	5	66
	Bruce Carrigan	6 PPC	45	18	3	66
10th	Jim Harris	6.5 - 06	32	26	7	65
	Glenn Shelton(*)	6 PPC	39	15	11	65

(*) Shooter placed with two different rifles.

Three shooter team match.

This is sort of a fun match... it costs all of ten dollars to enter a three shooter team, and one hundred percent of the entry fees go to the winning team. With fifteen teams entered this year, the pot was a modest $150... but it isn't so much the prize itself... the team match is hotly contested, and bragging rights for the ensuing twelve months is an important thing around here. This year the team match was won by a group of one thousand yard shooters... Mike Harris, Bob Crone, and Jimmy Harris.

The 1998 Egg Shoot.

Some 115 shooters elected to try their skill/luck/? this year... and fire one shot at an egg... displayed against a black background at 500 yards. When the gunsmoke and flying eggshell had cleared away, and the target crew had gotten most of the egg yolk out of their hair... ten shooters had hit the egg, and would have their names added to the big trophy. The skillful/lucky shooters for 1998 were: Steve Wilkins, Ron Bailey Sr., Gary Blalock, Lynn Dingler, Cody Ledford, Jimmy Harris, Larry E. Jones, Tom Goodman, Max Banks and Dusty Cabiness. They have joined a distinguished group of shooters from pervious years.

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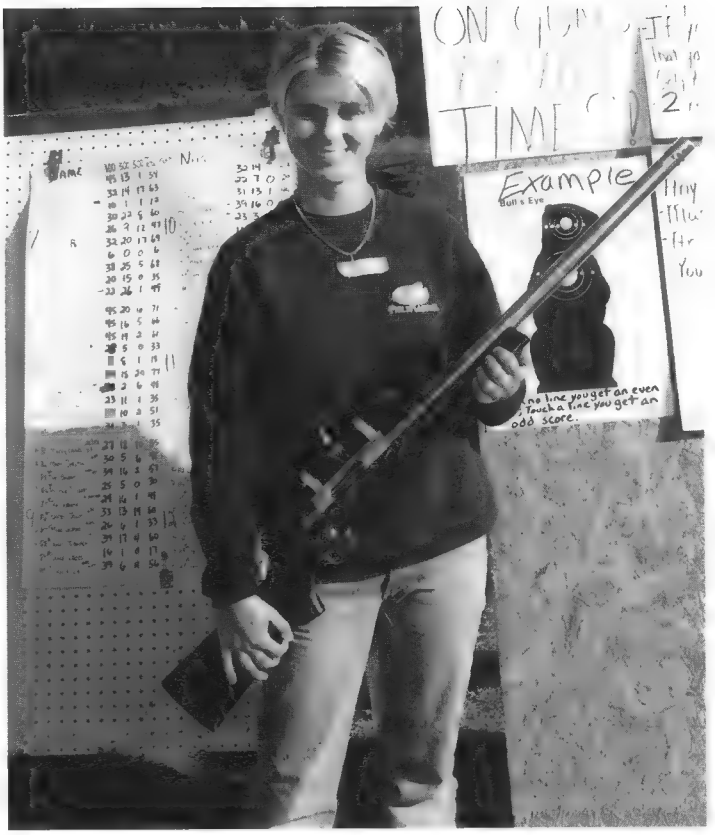

Any TS/PS photographer worth his salt knows that if there was a pretty female on the grounds, who shot well, and the photographer did not get a photo of her ... it's automatic exile and banishment. This photo of Crystal Jones probably saved my job for another year.

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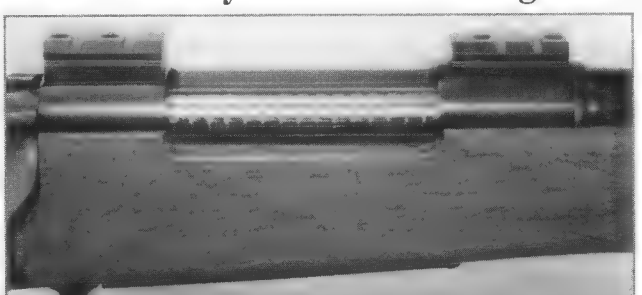

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The 1998 Groundhog and Egg Shoot

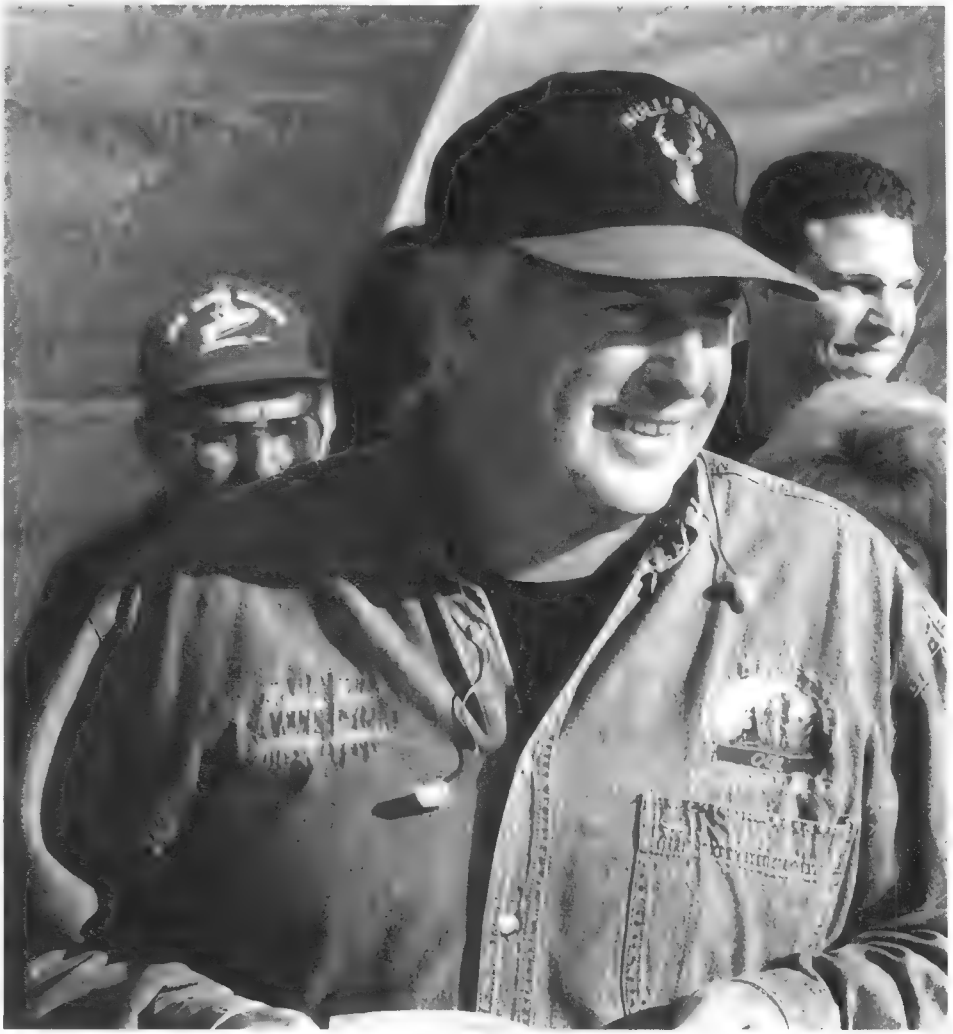
Continued

In closing.

A great shoot, done deftly in one day by Larry Willis and his crew. The match gets bigger and better each year, and I would not be at all surprised to see 300 shooters on the firing line next year. For those who have come late to the dance, the match sponsor is Larry Willis, of Bull's Eye Sporting Goods, 9176 North Highway 10, Vale, North Carolina 28168. Phone number there is (704) 462-1948. The modest entry fee, the prize money and the array of merchandise and services prizes offered, make this an especially rewarding event to take part in and enjoy.

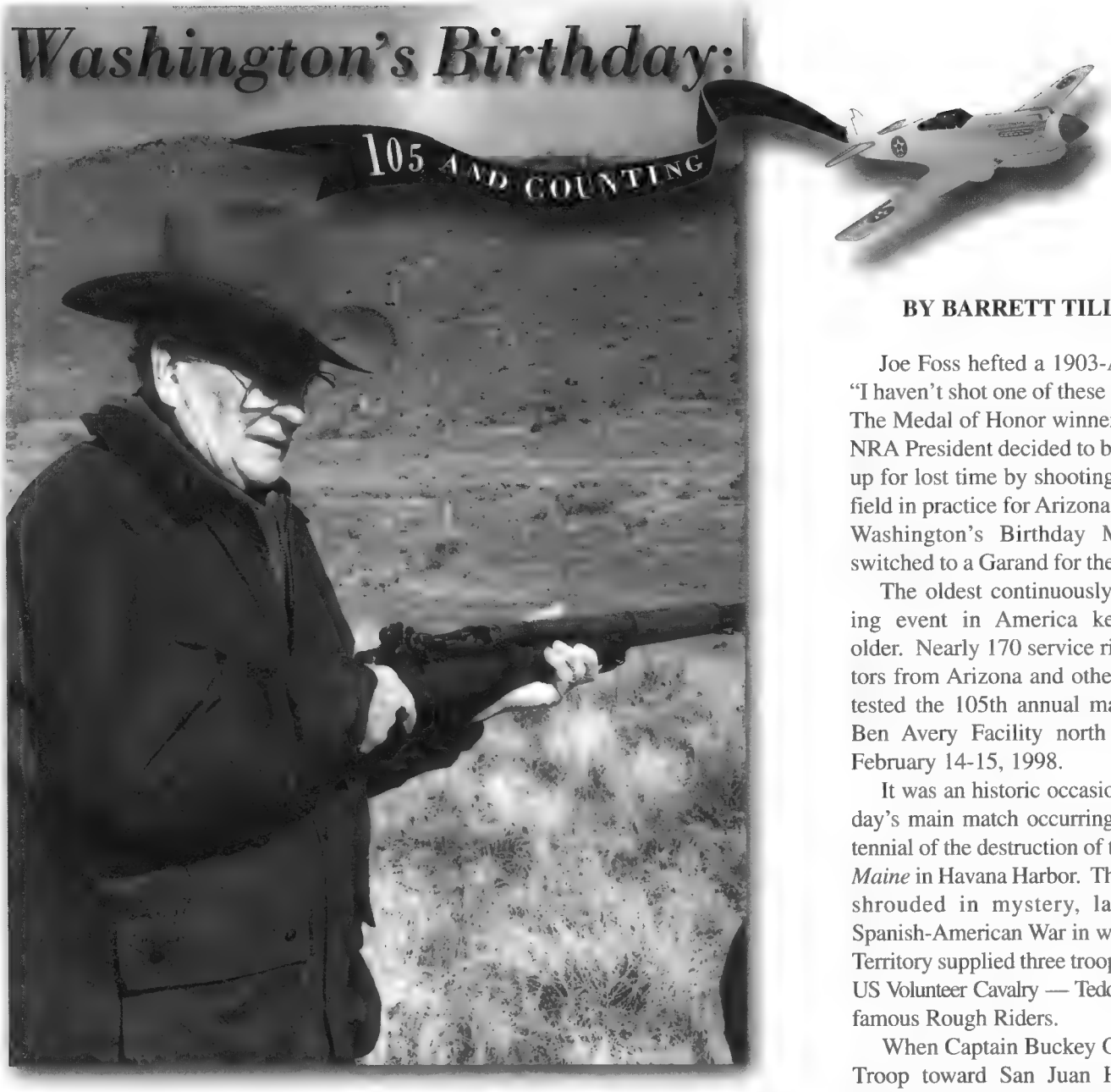
I'm aware of the *Tactical Shooter* editor's dream (and he has a habit of turning dreams into reality, as many of us have had to acknowledge in recent years) of having a "good" tactical rifle match in just about every region of the country in the next few years. "Good" is defined as easy-to-comprehend format, challenging, and not a physical survival struggle... and open to all comers (not restricted to a specific group). When we talk about this, on occasion, there's always one region of the country that never gets discussed at all... it's the area around Hickory, North Carolina. That area is "taken" in our Master Plan.

The guy who makes it happen, year after year... Larry Willis, honcho at Bull's Eye Sporting Goods.



Del Caulkin, inside the covered firing line at Hickory.

Washington's Birthday:



BY BARRETT TILLMAN

Joe Foss hefted a 1903-A3 and said, "I haven't shot one of these in 55 years." The Medal of Honor winner and former NRA President decided to begin making up for lost time by shooting the Springfield in practice for Arizona's traditional Washington's Birthday Match, then switched to a Garand for the main event.

The oldest continuously-held shooting event in America keeps getting older. Nearly 170 service rifle competitors from Arizona and other states contested the 105th annual match, held at Ben Avery Facility north of Phoenix February 14-15, 1998.

It was an historic occasion, with Sunday's main match occurring on the centennial of the destruction of the battleship *Maine* in Havana Harbor. That event, still shrouded in mystery, launched the Spanish-American War in which Arizona Territory supplied three troops of the First US Volunteer Cavalry — Teddy Roosevelt's famous Rough Riders.

When Captain Buckey O'Neill led A Troop toward San Juan Heights later that year, the Washington's Birthday Match already had been held for the sixth time. Originating in 1903 between teams from Tempe and Phoenix, some thought was given to a July Fourth event, but then cooler heads prevailed. Nobody really wanted to stand around in the Arizona sun at the peak of summer, so the February date was chosen.

Saturday (Valentine's Day) was devoted to a clinic for new shooters, followed by the practice match at Ben Avery. Conducting the clinic, complete in regulation Smokey Bear hats, were John Martin and Charlie Bombardier.

Bombardier then allowed as how he

Continued on next page

Joseph Jacob Foss has lived more and accomplished more in 83 years than most people could hope for in two lifetimes. Born in rural South Dakota in 1915, he graduated from the University of SD in 1940, by which time he was already a licensed pilot. He entered naval flight training later that year, receiving a Marine Corps commission in March 1941. By October 1942 he was a Captain and Executive Officer of Marine Fighter Squadron 121, flying Grumman Wildcats at Guadalcanal in the Solomon Islands. Upon leaving combat in January 1943 he was America's leading fighter ace with 26 credited aerial victories, a feat that earned him the Medal of Honor.

Joe formed his own squadron, VMF-115, and returned to the Pacific in 1944, but malaria forced a premature return home. Owing to a bureaucratic snafu, he missed the chance for a regular commission but was scooped up by the Air Force Reserve. He was cofounder of the South Dakota Air National Guard and attained Brigadier General rank in 1954. Meanwhile, he was elected to the State House, two terms as Governor, and led his own aerobatic team.

From 1959 - 66 Joe was first Commissioner of the American Football League, and he hosted two TV programs. He was NRA President 1988-90 and has been a Board member since then. He has co-authored two autobiographies and an anthology of fighter aviation, and remains a much sought-after lecturer between his frequent hunting trips and work on behalf of crippled children and Campus Crusade.

Washington's Birthday

Continued

may have erred last year in promising his grand-daughter Leona his pet M-1A if she qualified for Camp Perry. Which she did.

If there was an award for Longest Distance Traveled, it would have gone to Mario and Jenny Marsili, who commuted from Italy. Frequent visitors to Arizona, the Marsilis are active in a variety of shooting disciplines including IPSC and cowboy, but they have a special fondness for Washington's Birthday. After the event, Mario confided, "Jenny was disappointed that they didn't have the recording for *The Star Spangled Banner*, because she always likes to salute the American flag." (At this point we shall forego any obvious comments about the lack of similar sentiment among America's elected or appointed officials.)

Joe Foss, at 82, was probably the senior shooter on the line. His team, "Joe's Jokers," (named for the fighter squadron he led in 1943-44) was organized by NRA rep Dean Hall with Barrett Tillman and a "conscripted" former Marine sniper, Deputy Dennis Armisted.

At the end of the match, Joe allowed as how he managed to avoid M-1 Thumb from "that danged machine" and conjectured about switching to an AR-15 next year.

Match winner, and leading the 111-strong civilian list, was Mike Harlow with 487 (11X). One point back was Derrick Martin of Accuracy Speaks, Inc., who topped the seven-man service field with 486 (16X). In an impressive showing, Ryan Smith led 16 juniors with 479 (8X) while Frank Lucero finished as "top cop" with 474 (14X). Among the 18 seniors, Ron Piotrowski shot 471 (12X), and Danielle Abbot topped the seven-strong women category with 464 (5X).

Among the team winners, high overall (to no-one's surprise) was Accuracy Speaks under *Precision Shooting's* own Derrick Martin with 1888 (37X). Leading the service teams was the 162nd Arizona Air National Guard Gold with 1864 (48X) while the high club team

Continued on page 38

Another worthy old warrior...A Springfield '03...returns to the firing line.

Mike Harlow (left), 1998 Washington's Birthday Match winner, with Range Master John Martin. At the Ben Avery Range, Phoenix, Arizona, February 1998.

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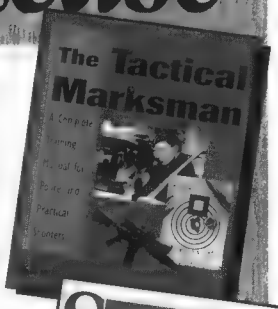
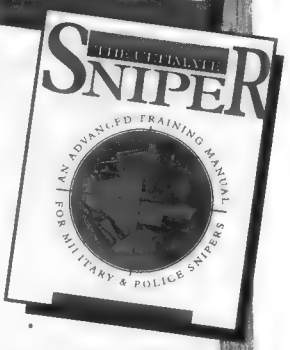
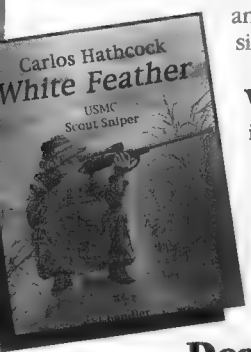
The Tactical Shooter Bookcase



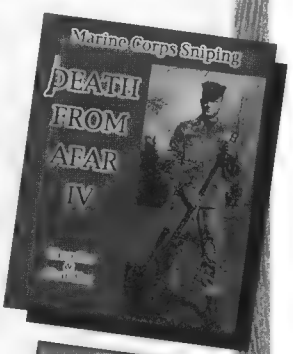
The Tactical Marksman, by TS staff member Dave Lauck, principal by D&L Sports, of Gillette, Wyoming. A complete training manual for police and practical shooters. Mr. Lauck is a preeminent proponent of the need for police tactical shooters to have, and be qualified with, two long arms... the tactical carbine, and the tactical rifle. In his new book he builds a convincing case for his belief in this area. A 75 yard hostage situation presents an entirely different scenario than does a 600 yard situation! Professional marksmen and police officers will find Lauck's expert advice and firsthand experiences right on target, but this book is also ideally suited for field shooters and competition shooters. 8½ x 11 size, soft cover, 176 pages, extensively illustrated. **$35.00**



The Ultimate Sniper, by Maj. John L. Plaster, USAR (Ret.). This may be the only military/police sniping and long-distance shooting guide that you will ever need. It is not a dry, technical military manual, but rather a highly readable and extremely valuable training book written by a US Army Special Forces/MACV-SOG veteran with a decade's experience training military and police snipers. Hundreds of photos, special illustrations, charts and information sidebars explain the practical, field-tested details of the three great skill areas of sniping - marksmanship, field craft and tactics. Twenty two instructive chapters cover modern sniper rifles, scopes, bullets and ballistics, basic and advanced marksmanship, range and wind estimation, temporary and permanent hides, spotting and target detection, camouflage, stalking and mantracking, countersniping, special sniping operations and environments, the all-important differences between military and police sniping and much more. Also included are a complete glossary of sniping and marksmanship terms, and an invaluable listing of current sniper training programs. 8½ x 11 size, soft cover, 464 pages, extensively illustrated. **$39.95**

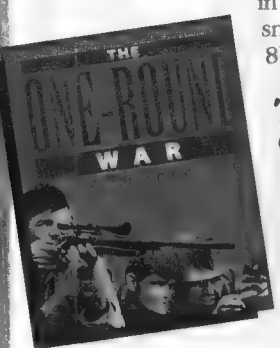


White Feather, by Norm Chandler and Roy Chandler. Gunnery Sergeant Carlos N. Hathcock II, USMC is widely recognized as our nation's ultimate Scout-Sniper. The very personification of the sniper motto, "One shot, one kill", his 93 confirmed kills in the Vietnam War made him a legend and an icon to fighting men of his era. The winner of the coveted Wimbledon Cup at Camp Perry in 1965 (contested at 1000 yards), Sergeant Hathcock became the ultimate applicant of Highpower target shooting skills to the battlefield, a transition often discussed, and seldom accomplished in real life. His life story, this book is authored by his two long-time friends, Norm and Roy Chandler, who are TS staff members here. We offer a special limited edition, autographed by both authors, and also by Carlos Hathcock himself. Hard cover, 8½ x 11, 275 pages. **$54.95**



Death From Afar, Volume IV. By Norm Chandler and Roy Chandler. The DFA series on the Marine Corp Scout-Sniper program was originally planned (perhaps ambitiously, or so it seemed at the time) to be a trilogy. So much for that plan... Volume IV is unquestionably the best to date (and volume V is close to publication as we write this). The book's layout tends to jump around a bit, if you happen to be a journalist purist... but we suggest you get beyond that, and just appreciate the inner-circle discourse on Marine Corps Scout-Sniping. One half of the writing team, Lt. Col. N.A. Chandler (Ret.) was an active duty Marine for 24 years. He has been a Rifle Company Commander and a Weapons Company Commander. "Distinguished" with rifle and pistol, he won the Pershing Trophy at Camp Perry in 1978. The other co-author, Roy Chandler, was a Master Sergeant with the US Army in WWII, and Korea. Exactly how one became a Marine, and one an Army soldier is lost in history, and we won't reopen that can of worms here... they've been fighting over it for years and years now. A major chapter in the book devotes some 27 pages to an overview of the building of the celebrated Chandler Sniper rifle (all Chandler Sniper rifles remain in the hands of the original owners; to this day none has been resold). 8½ x 11, hard cover, 271 pages. Autographed by Lt. Col. Norman Chandler. **$49.95**

The Long-Range War, by Peter Senich. The Vietnam War marked the first time that the US Military brought together trained snipers, custom rifles, telescopic sights, special ammunition and noise suppressers and employed them successfully in a combat environment. Yet contemporary works on the Vietnam conflict have largely ignored the unprecedented use of snipers and sniping equipment. This book, by a TS columnist writer, generally regarded as the leading historian of military sniping in the modern era, focuses on the US Army sniping in the modern era, focuses on the US Army sniping program, the fielding of the XM21 sniper rifle (essentially a National Match M-14), and the Adjustable Ranging Telescope. 8½ x 11 hard cover, extensively illustrated, 280 pages. **$39.95**



The One Round War, by Peter Senich. This book, by TS columnist Senich (see above for credentials) focuses on USMC Scout-Snipers in Vietnam... the circumstances behind the training and employment of snipers, the equipment sent to Vietnam for sniper use, the transition from the Vietnam-era M700 sniping rifle to the contemporary M40A1 and the extreme effectiveness with which Marine Scout-Snipers countered the tactics of the guerrilla forces they faced. 8½ x 11, hard cover, extensively illustrated, 384 pages. **$49.95**

ORDER FROM: Precision Shooting Magazine, 222 McKee Street, Manchester, CT 06040. Shipping and handling is $3.50 for first book, $5.00 for multiple books - US. Foreign orders (including Canada) will be charged actual shipping costs plus $1.00 handling. Master Card and Visa orders accepted without surcharge at our CT office (860) 645-8776 phone; (860) 643-8215 fax. CT residents add 6% sales tax; NY residents add 4% sales tax.

Washington's Birthday *Continued*

was the FSA X-Men at 1864 (45X). The Arizona Sandbaggers topped the civilian field at 1789 (34X) and Paradise Valley PD led the cops with 1641 (12X). The Guardsmen again were heard from as the 162nd ANG Has-Beens led the seniors at 1627 (15X). Finally, the Arizona Junior Number Two gave many of their elders a serious run for the roses with an 1837-26X score. (Editor - Confounded kids... no respect for their elders any more... mumble, mumble...)

Even the most tyro of PS/TS writers and photographers know that if a pretty female won an award, and they didn't get a photo of her ... it's good for banishment to the nearest fly-fishing magazine. Here's Danielle Abbott, a Junior shooter who grabbed High Woman honors for the day.

Looking about as serious as always (which is to say... not at all) PS staff writer Derrick Martin, a prolific award winner for the day, seems to be mugging the Range Officer here. He does this a lot... when he does not win the match. We're trying to make a better loser out of him, but it's really an uphill struggle...

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Texas Pistol Academy,

Professional Training for the Tactical Shooter

BY MIKE R. LAU

When Robert Duhon bought some property in the country a while back for his home and own shooting needs, little did he know that it would turn into a lucrative and fun business. For 20 years, since 1969, Robert had been an "A" Team member in the U.S. Army's 12th Special Forces Group based in Fort Worth. Robert was sent to locations in South America, Korea, Malaysia, Alaska, and elsewhere, to construct facilities and train "people" in the use of small arms, demolition, and military tactics such as ambush techniques. Don't ask Robert who these "people" were or what their mission was, he won't tell you. In 1979, he attended Jeff Cooper's Gunsite facility. This inspired him to want his own property to live and shoot on so he acquired a small parcel of land in Whitewright, Texas.

In the early 1980's, a California corporation was interested in training some of their personnel in security with courses emphasizing how to handle stress and confrontational situations involving the use of firearms. They were also interested in keeping the training covert. When the corporation learned about Robert Duhon, they hired him. Besides paying for the training, they bought all the firearms he requested. Others learned of the training offered by Robert and his business took off. His clients

Continued on next page

Staff from L to R: Rocky Gilley, Brian Bilbo, David Newman, Robert Duhon, Terry Reid, Tod Hunter and Alan McBee.

Texas Pistol Academy

Continued

include a well known entertainer and other top level business executives. In order to accommodate the expanding firearms training facility, he bought up additional surrounding properties and now has 150 acres, which also include his home, storage and maintenance facilities, and stables.

Continually improving training, Robert reinvests profits to improve handgun, shotgun, and assault rifle facilities. There is a sophisticated Reactive Pistol Course similar to the one used by Bill Rodgers and HK. Two classrooms, a moving target range, and a "Shooting House" were also constructed for handgun, shotgun, and assault rifle. An 800-yard firing range was recently constructed and there are future plans to construct a target pulling pit behind the farthest gravel bank. Long range rifle courses were added and a four story tower was constructed on the rifle range which is also a rappelling tower. Robert also increased his staff to six instructors.

Besides training civilians, Robert trains numerous law enforcement personnel throughout the year, and the Academy hosted the Texas Police Olympics last year. A Personal Security Concern course is a new offering. Students are taught how to detect persons who are following or stalking them and methods to thwart these actions. Based on CIA doctrine, the course was designed for persons who travel a lot, but the techniques can be used by anyone who may have similar security concerns. There was such a class being conducted when I visited Robert at the Academy.

Civilian firearms training courses currently offered by TPA are scheduled monthly and include:

1 Day Rifle or Handgun Refresher Course – $175
2 Day Basic Handgun Course – $400
2 Day Intermediate Handgun Course – $400
2 Day Advanced Handgun Course – $400
2 Day Shotgun Course – $400
3 Day Long Range Rifle Course – $475
2 Day Carbine Course – $400
1 Day, 3 Gun, Round Robin – $175

All civilians attending courses are required to have character references on their application. Texas Pistol Academy is located 65 miles north of Dallas. Robert Duhon can be contacted at 903-364-2076 and his website is texaspal@GTE.net. You can also write him at Route 2, Box 247 Whitewright, TX 75491.

Texas Pistol Academy is not just a place to shoot. Training ideology teaches the student to respond to a threat in a well calculated and comprehensive manner. Students are conditioned to respond effectively to the threat of violence. For those seeking to improve their skills with firearms, the Academy provides excellent training with emphasis on live fire for all types of firearms. Law enforcement, as well as civilian shooters, will be exposed to new and interesting tactical situations that will challenge and improve their shooting and mental skills. Robert's qualified staff of knowledgeable and experienced instructors provide realistic and extensive live fire experiences while maintaining a safe training environment. For a place to teach you the basics or advance your tactical shooting skills, Texas Pistol Academy gets my two thumbs up.

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Featured In the Photo Is the Dutch SLA .338 Lapua Magnum Complete Kit As Issued to the Dutch Army
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Robert Duhon engages steel targets on his Reactive Steel Range. Similar to Bill Rodgers' Reaction course and built by Porta-Targets of Florida, course of fire is designed to simulate high-stress armed confrontation for the combat handgun shooter. Shooter fires at pneumatically operated steel head and body targets within short time limits. Instructions for target engagement can be purposely made difficult to further stress the shooter. Size of targets require correct use of front sight focus to make hits. Shooter is required to reload or clear malfunctions behind barricade. Stress on shooter is greater than shooting at paper targets or falling plates and is a lot more fun to shoot because of the quick feedback and realistic varying tactical problems presented.

Continued on page 44

The Anatomy of A Tactical Shooter

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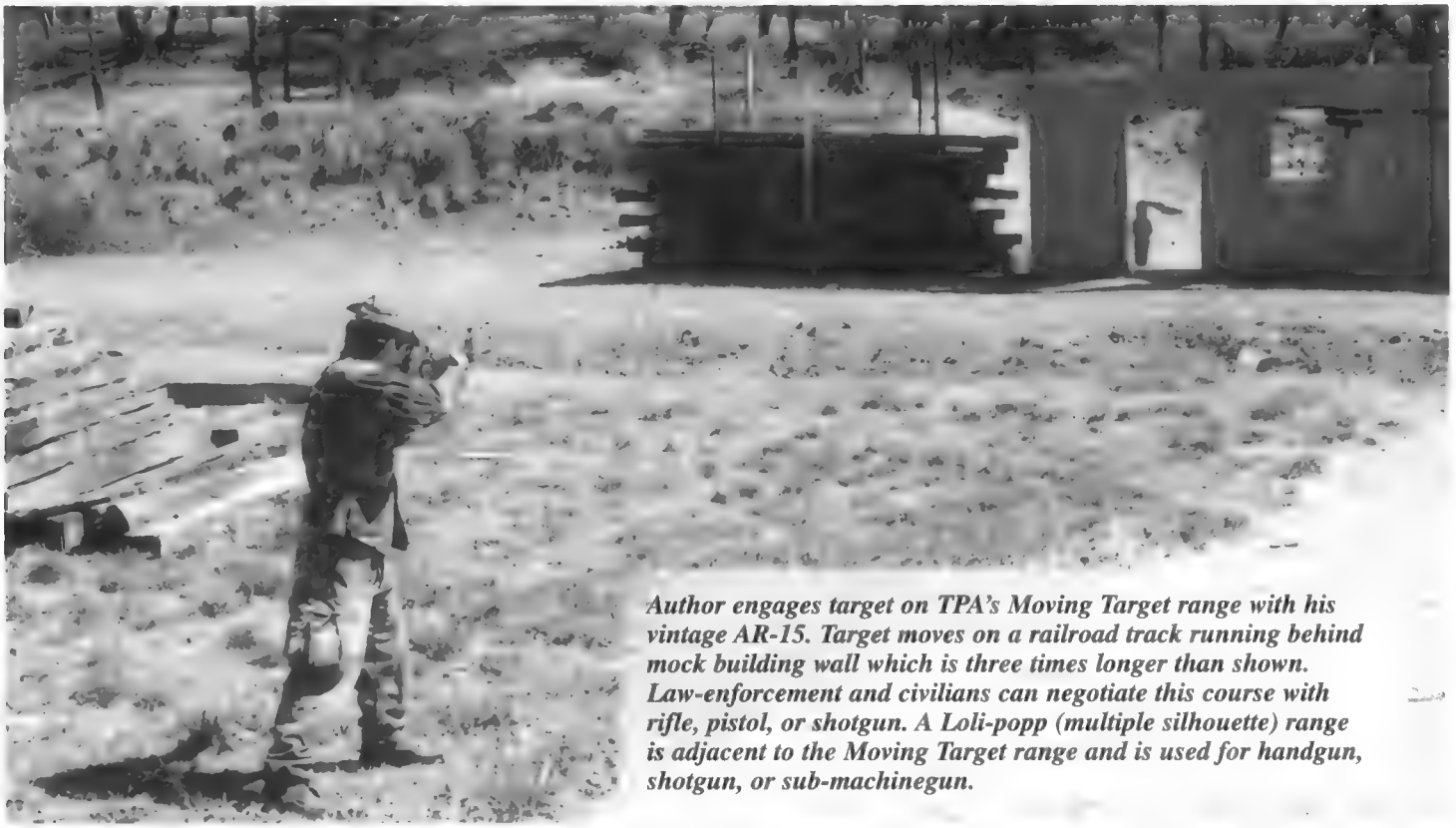
Texas Pistol Academy *Continued from page 41*



Author engages target on TPA's Moving Target range with his vintage AR-15. Target moves on a railroad track running behind mock building wall which is three times longer than shown. Law-enforcement and civilians can negotiate this course with rifle, pistol, or shotgun. A Loli-popp (multiple silhouette) range is adjacent to the Moving Target range and is used for handgun, shotgun, or sub-machinegun.

Author enters one of the rooms in "Shooting House" where several targets are engaged with the AR-15. Handgun or shotgun can also be used to "sweep" house.

Continued on page 47

Our First Book Offering in several months...

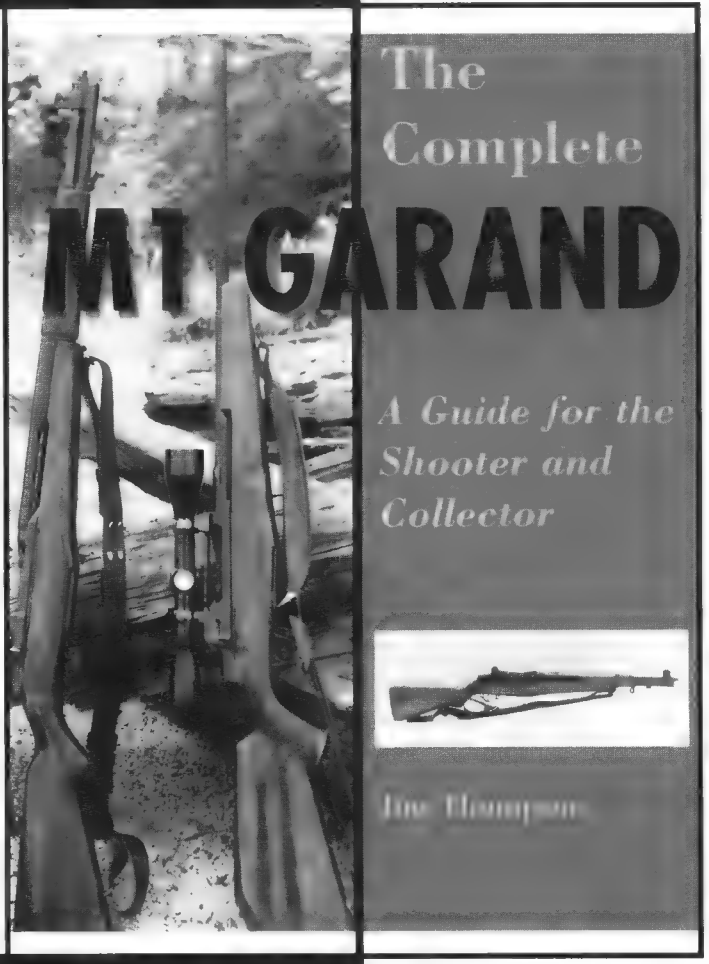
The Complete M1 Garand
(A Guide for the Shooter and Collector)

BY JIM THOMPSON

(Yes, there is a book offering in this issue from the Chandler brothers... but they're just about family here at PS, so we don't count them...)

We've had the darndest time in the last six months, looking for good books (published by others) to offer for sale to our readership. A few publishers have become *quite* annoyed at us when we mildly offered the opinion that their latest pride-and-joy was not exactly the second coming of *The Bridges of Madison County*. Well, what's an angry publisher or two... or three?

At last... a book that, upon the receipt of a review copy here... had us on the phone to the publisher within the hour. At last...



THE COMPLETE M1 GARAND ...

just a delightful 147 page read... lavishly illustrated with over 180 photos... truly "A Guide for the Shooter and Collector".

The first self-loading rifle to see widespread military use, the robust M1 Garand survived the tests of battle in both World War II and Korea and remains a favorite among competition shooters and collectors to this day.

In this heavily illustrated, practical history, author Jim Thompson, himself an avid M1 shooter and collector, tells the complete story of the rifle's development, look, feel, and function. A thoroughly researched overview of the M1 Garand provides background on manufacturers and stateside sources as well as discussing ammunition and accuracy. Detailed photo sections present the early and World War II rifles; the World War II and postwar rebuilds; special purpose rifles and rarities, including the sniper rifles, the match rifles, and the T26; and spin-offs and derivatives, including the M14, M1A, and BM.59.

In addition, reprinted military and National Match manuals, a trouble-shooting chart, and a section on reloading provide valuable functional data and rules of thumb with the shooter in mind. Collectors will benefit from an extensive parts compendium and up-to-date market information complete with listings of resources and suppliers.

The Complete M1 Garand is destined to be the classic reference book on this classic battle rifle.
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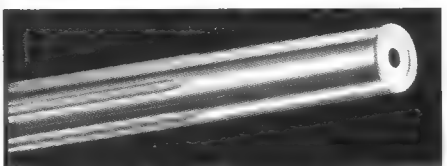

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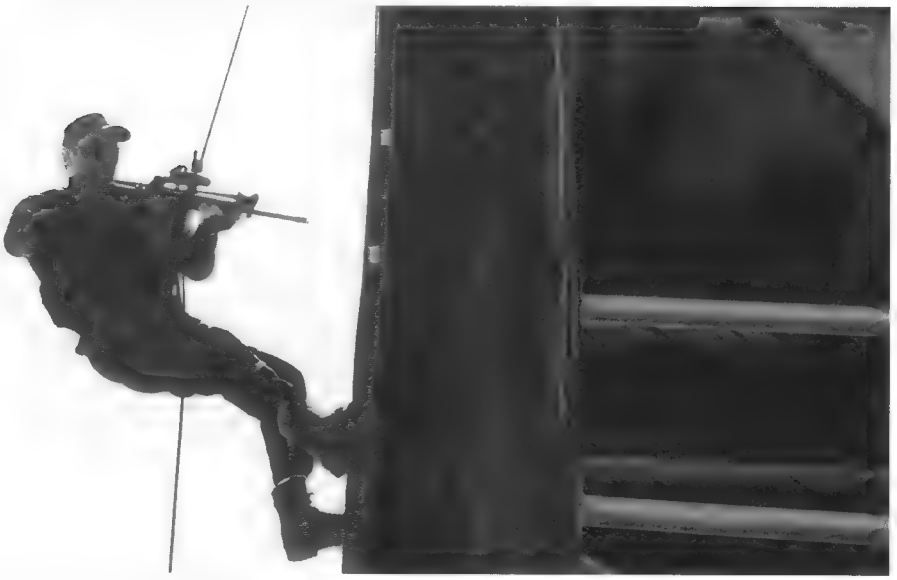
For information on Savage firearms or Savage's full line of shooting ranges and accessories, contact Savage Arms/Savage Range Systems inc. 100 Springdale Road, Westfield MA 01085

Texas Pistol Academy *Continued from page 44*



Newly constructed four story shooting tower is located on rifle range. Right side of tower is a rappelling wall and opposite side has helicopter skid for same. T.J. Pilling, Garland, Texas, SWAT, demonstrates method to engage armed gunman with assault rifle from outside high rise building. Specially designed rappel rope brake is patterned after the aluminum Israeli brake except made from steel. Brake is similar to the Petzl STOP and will brake the descender when the lever on the brake is released by the hand.

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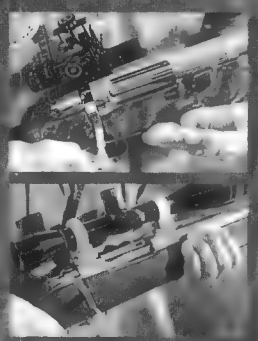

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Rifle range has covered firing line. From this location, maximum target distance is 500 yards to farthest embankment. Distance is increased to 800 yards known distance, or any long range unknown distance, by firing from area behind and to the left of the covered firing line along the road. Yardage numbers are painted on wood held in rubber tractor tires. Beyond the 500 yard burm is a pond with a floating device holding a metal target that can be heard when hit. The impact area beyond pond is used for Ghillie suit stalking exercise.

Gas mask exercise reminds shooters of possible chemical/bio hazard and adds realism to all shooting courses. Shooters experience the discomfort and difficulty of firing a weapon with the gas mask. Frank Erhart is wearing an M17A1 and found that canting the rifle slightly helped to get good head position and kept filter opening from interfering with stock. 100 yard target at top was fired by Jerry Iliff and on bottom is Frank's. Both 5-shot groups made while wearing the mask.

Texas Pistol Academy is the only public or private range known to author near the Dallas-Fort Worth area that can handle caliber .50 rifles. T.J. Pilling fires his Robar .50 Caliber bolt rifle. The Rock McMillan (McBros) .50 BMG action is fitted with a K&P barrel and is super accurate. Lake City 1990 M33 ball ammunition easily produced less than 1/2 MOA 3-shot group.

Continued on next page

This is not what the muzzle whip looks like when firing the Robar .50. Robert Duhon took this photo of author firing the big .50 with my camera not leveled. Large receiver of McBros action places 16X Leupold scope high and does not allow for proper cheek positioning, but that's OK, I didn't feel like getting hit in the face by the stock. To control recoil, pull the rifle very tight into the shoulder and increase your grip. Keep your eye relief from the scope to a maximum. The excellent trigger broke cleanly and the recoil was heavy. Felt like around 70 to 80 ft.-lbs., but you can feel the soft rubber recoil pad slowly compress on your shoulder to turn the recoil into a long hard push. The 29 lb. rifle and the muzzle brake helped to reduce recoil a lot as the shooting mats on both sides of the rifle were lifted up from the blast. The bullet went right into the point of aim. Bottom line is that, although there is a considerable recoil and blast, the McBros/Robar rifle is so accurate, it will consistently shoot 1/2 MOA groups with military ball ammunition and a little effort on your part.

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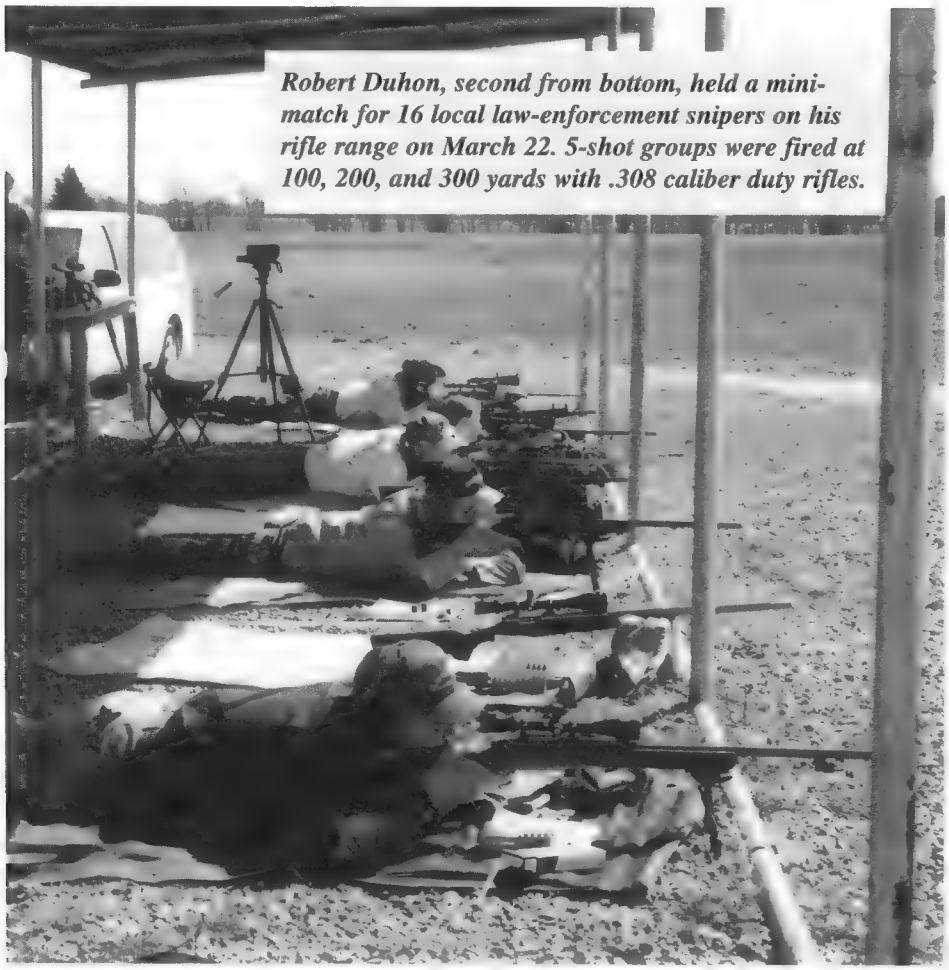
Winners of the sniper mini-match are (from left to right) Jerry Iliff, 100 yards, Dallas PD; Jon Lannom, 200 yards; and Frank Erhart, 300 yards, Fort Worth SWAT.



Robert Duhon, second from bottom, held a mini-match for 16 local law-enforcement snipers on his rifle range on March 22. 5-shot groups were fired at 100, 200, and 300 yards with .308 caliber duty rifles.

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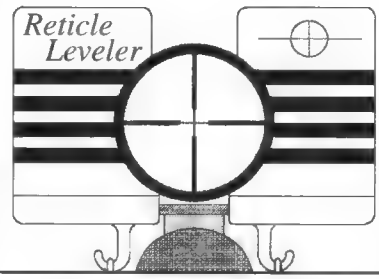

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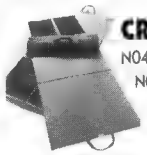

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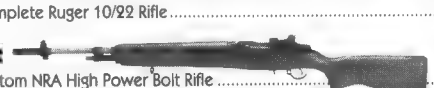

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The M21 and M25 Semi-Automatic Sniper Weapon Systems

BY HUGO TEUFEL

As we approach the 21st century, the U.S. Department of Defense is considering alternative sniper weapon systems (SWS) to the venerable but outdated M21 system, based upon the M14 battle rifle, and the M24 system, based upon the Remington 700 action. In the interim, the U.S. military has developed a "work around" SWS, the M25, to fulfill certain mission requirements that the M24 cannot. I say "work around," because the M25 is not an official SWS of the military and, indeed, there is some variation in the M25s which the various military units field. Because so little is available on the M25 system, I thought that those who are interested in, or who use, semi-automatic SWSs would find the material of value and interest.

A brief history of the M14 and M21

Before we can discuss the M25 and M21 SWSs, we must consider the M14, upon which both systems are based. The M14 was the result of the Ordnance Department's desire in 1944 for a product-improved version of the M1 rifle with a detachable magazine and select fire capability. During the rifle's development, NATO standardized the 7.62mm NATO (7.62 x 51mm) cartridge, a round very similar to its commercial cousin, the .308 Winchester. The then-current developmental version of the M14, known as the T44, was chambered in 7.62mm for testing at Aberdeen Proving Ground. A few years later, in 1957, the U.S. military adopted both the 7.62 NATO round and an improved version of the T44, the T44E4, now known as the M14.

As a semi-automatic battle rifle, the M14 excelled. As a select-fire weapon, the M14 was unsatisfactory. Moreover, with the military's adoption in the 1960s of the M16 as the primary infantry weapon and the preference for the M60 machine gun as a squad automatic weapon, there seemed to be no role left for the M14. It was, however, the military's need for a sniper weapon for use in the Viet Nam conflict that saved the M14 from the graveyard of obsolete weapon systems.

The military, and in particular the U.S. Army Marksmanship Training Unit, had worked on improvements to, and had begun designing telescope mounts for, the M14 by the late 1950s. In 1959, Springfield Armory began work on development and fabrication of a prototype M14 National Match rifle. As a result of Springfield's efforts and the National Match Engineering Program, the military began production of the National Match M14 in 1962. The military required the rifle to shoot an extreme spread of 3½" at 100 yards for 5, 10-round groups and, the National Match M14 — when properly maintained — is a sub-minute of angle (MOA) gun. The National Match M14 has the following features: a barrel bore with stricter tolerances than standard requirements, and with no chrome plating; a glass bedded stock assembly; all rifle components are selected for the best fit; the selector shaft, sear release, selector lock, and receiver sear release lug are welded; and the rear sight is of stricter tolerance, and has ½ MOA adjustments for windage and elevation.

The military was also working on the development of a scope and mounting system for the M14, though it was not until 1965-66 that the effort became serious, because of the military's urgent need for sniper weapons for use in the Viet Nam conflict. During this time, the Army's Infantry Board began considering the M14's use as a sniper weapon. The Infantry Board made three important findings: 1) the M14 should have National Match characteristics; 2) it should use the M118 Match Cartridge; 3) a variable power scope with a minimum of 4x power would be necessary.

Around this time, LT James Leatherwood, while stationed at Fort Benning, GA, came up with the idea of using a Redfield Accurange 3x-9x telescope with a cam that would serve as a bullet drop compensator. The scope, with integral mount, would attach to the National Match M14's receiver with a large screw. The scope was ideal for inexperienced shooters, because one could adjust the vertical stadia of the scope on the target, knowing that at a given distance and power (taken care of by the combination variable power ring/compensating cam), the stadia would equal 30". The shooter could align the stadia on any object of that size through use of the cam and have the range compensated for when he shot the rifle. The final version of this scope was known as the ART (Automatic Rangefinding Telescope) TEL, though it is more commonly known as the ART I.

When the ART TEL was mated to the National Match M14, the resulting weapon system became known as the M21. The M21 was the primary Army SWS for almost 20 years, and had few modifications. One important modification was the upgrade in the scope, from the ART TEL to the ART II. Three important differences exist between the

Continued on next page

The M21 and M25

Continued

ART scopes. First, the stadia on the ART II subtend at one meter, not 30". Second, the ART II allows the shooter to uncouple the bullet drop compensator from the variable power ring. Third, the ART II uses two mounting points on the receiver, not one as with the ART I.

The birth of the M25

By the mid-80's, the M21 was facing retirement. The Army was considering replacement SWSs for the M21, in part, because of maintenance problems with the system. Problem areas included the wood stock, the rifle bedding, the gas system, and the scope (e.g., loosening of mounts, loosening of the cams). General James A. Guest, commanding officer of the J.F.K. Special Warfare Center at the time, testified before Congress that the M21 was an outdated system and that the military needed the M24. Unfortunately for the Special Operations and sniping communities, the demise of the M21 left U.S. military snipers without a back up SWS. Notwithstanding General Guest's comments, the shooters were able to convince the powers-that-be that the military needed a sniper support system. The result was the M25 SWS.

The development of the M25 began with the Army's 10th Special Forces Group and Brookfield Precision Tool (BPT), who worked on this product-improved version of the M21 between 1986 and 1988. Though originally developed by the Army, both Army and Navy units use the system. Moreover, since its development, there have been a few improvements in the M25, though there are some minor differences between the versions used by the Army and Navy. I will address next, the differences between the M21 and M25 systems.

The differences between the M21 and the M25

The M21 issued stocks were epoxy-impregnated wood (walnut or birch) with bedding to stabilize the barrel/receiver assembly. Even with the epoxy treatment, M21 stocks were prone to warpage from changes in humidity. Moreover, there were problems with the bedding holding up and the rifles often required rebedding by 2,000 rounds, well below the lifespan of the system.

Practically all M25s use the McMillan fiberglass stock, which is less prone to warpage than wood stocks or other synthetic stocks. Early M25s used the standard synthetic M14 or "M1A" stock with a BPT stock liner imbedded in it. Later versions of the M25 use the McMillan M2A stock. According to McMillan literature, the M2A stock "is a pistol grip M1A [stock] with a vertically adjustable saddle type cheek piece. When equipped with this stock and a scope, the weapon is designed for use as a long-range weapon. The adjustable cheek piece allows the shooter to see through the scope and still maintain a desirable cheek weld." Some units paint the stocks to match the terrain and features of their areas of operations.

Additionally, to further stabilize the M25 system, armorers weld a second recoil lug onto each receiver to improve the stability of the receiver in the bedding. Further, some units have simplified the gas system on the M25, improving the system's reliability.

As stated previously, the day telescopes on the M21 were either the Leatherwood ART TEL or ART II systems with rangefinding and bullet drop capabilities. In contrast, the M25 is scoped generally with fixed power telescopes. The specific make and model of scope is the owning unit's preference, though there are three main favorites. Army units using the M25 prefer the Leupold Ultra (now Mk. IV) M3A 10x (the M24's current day telescope) with 3/4 mil dot reticle. The M3A, of course, has a bullet drop compensator, with separate cams for the .308 Match (Federal Gold Medal ammunition with 168 gr. BTHP Sierra MatchKing, or the M852 Match Cartridge with the same bullet) and the M118 (Lake City match ammunition with 173 gr. BTFMJ). I assume that Leupold makes a cam for the new M118LR, utilizing the 175-gr. BTHP Sierra MatchKing developed jointly by Sierra and the Army Research, Development and Evaluation Center.

Navy units prefer either the Bausch & Lomb Tactical Riflescope, 10x with mil dot reticle or the Leupold Mk. IV M1 day telescope at 16x. Both of these scopes allow for windage and elevation adjustments in 1/4 minute-of-angle clicks, making for very precise, but perhaps somewhat slow, adjustments.

There have been reports of units equipping their M25s with the very rare Leupold Ultra M-2 10x telescope. The M2 was Leupold's attempt to create a reticle that could be taught with a minimum of effort to third world military units with limited abilities. The concept was sound, but its realization was not. The decrease in accuracy with the reticle is most acute when a shooter most needs the accuracy. The Army found hits past 500 meters with the M2 was more a function of the shooter's experience in seeing the target relative to size and making it "fit" for range. When a new shooter was given the M2 for use, hit accuracy became abysmal. The scope is, apparently, no longer in use.

Again, as stated previously, the scope

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mounts on the M21 were integral to the ART TEL and ART II scopes. The M25's scope mount is separate and is produced by BPT. Some have stated that the M25 also uses a mount produced by Atlantic Research Marketing Systems (A.R.M.S.), specifically, the number 18 "Foundation" mount. I have heard, though, that other than the 82nd Airborne and the Special Warfare Center, Special Operations Target Interdiction Course (SOTIC) (for testing purposes only), no military unit uses the A.R.M.S. mount. I do not know whether any federal law enforcement agencies using National Match M14 systems (*e.g.*, Customs) use the A.R.M.S. mount, though I must assume so, given the mount's issuance of a National Stock Number. Finally, it would appear that all scopes are mounted on the M25 system with Leupold Mk. IV rings.

The future of the M25 system and alternative semi-automatic SWSs

How long the M21 and M25 SWSs will be around is difficult to guess. Neither the M21 nor the M25 systems are perfect. In fact, the M21 and M25 suffer from loss of accuracy due to change in the barrel impulse caused by debris entering into the gas/operating rod area. There is no fix for this problem. In comparing the two systems, the M21 is a respectable performer, as long as one does not take the system into other than a desert environment. If one does so, the M25 is the better performer because of the modifications in the stock/bedding arrangement.

There likely will always be a need for a semi-auto SWS. The rifles are ideal for spotters in two or three-man sniper teams and are chambered for the same round as the current issue bolt-action M24 SWS, allowing for interchangeability of ammunition. The advantage of semi-auto precision fire is obvious: while the main shooter takes out the primary target, the spotter can take down rapidly, secondary targets, vehicles, or counter-snipers. Further, the M25 is an ideal rapid target acquisition system, and is used by some units to provide withering cover fire from above, using helicopters as shooting platforms.

Understanding the importance of the semi-automatic SWS, but dissatisfied with the M21 and M25 systems, some Special Operations units, looking at alternatives to these systems, have switched over to the Knight's Armament Corporation SR-25, chambered in 7.62 x 51mm, with the Mike Rock-designed M24 cut barrel and 60% parts interchangeability with the M16. Others are looking at the ArmaLite AR-10(T), also chambered in 7.62 x 51mm and also using the M24 cut barrel. The major reason for switching over to the SR-25 or the AR-10(T), is that these systems are much easier to maintain than are the M21 and M25.

Both the SR and AR are both good, if limited, weapons, though there have been reports from various Special Forces Groups experiencing functioning problems with the SR (*e.g.*, 5th, 7th, 9th and 10th SFGs, SFOD-D), with others having no problems and really loving this system. One veteran Special Operations shooter informed me that his experience has been that the SR initially is more accurate than the AR-10(T) and M25, but seems to degrade in performance faster than one would expect. The same barrel is used in the SR as in the M24, and one can get close to 10,000 rounds through an M24 before barrel burnout. One could assume only that the problems with the SR either exist in the gas system junction in the barrel, or relate to possible harmonic problems after use with the gas system becoming loose. I have heard that the AR-10(T) seems to hold up better with fewer problems in functioning.

Upon which semi-automatic sniper system the military chooses for the next century, we will have to wait and see. Certainly, the M14 has served its country well and, indeed, continues to do so.

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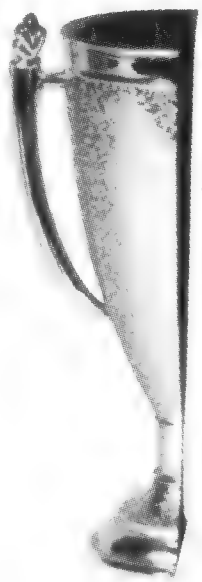
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Way, Way Out There

Bruce Artus from Bill's Gun Shop in Pueblo, Colorado shoots prairie dogs from his portable, homemade bench way, way out there. His Obermeyer barelled Winchester 70 in .308 Ackley Improved is launching 220 grain Matchkings into the next millennium... And those singular leg gauntlets were not designed for leg protection during a night of dancing at Studio 54. Our shooter encounters maybe a half-dozen rattlesnakes a day out there in the prairie dog world. The gauntlets sort of level the playing field when meeting one of the scaley folks.

BY STEVE HUGEL

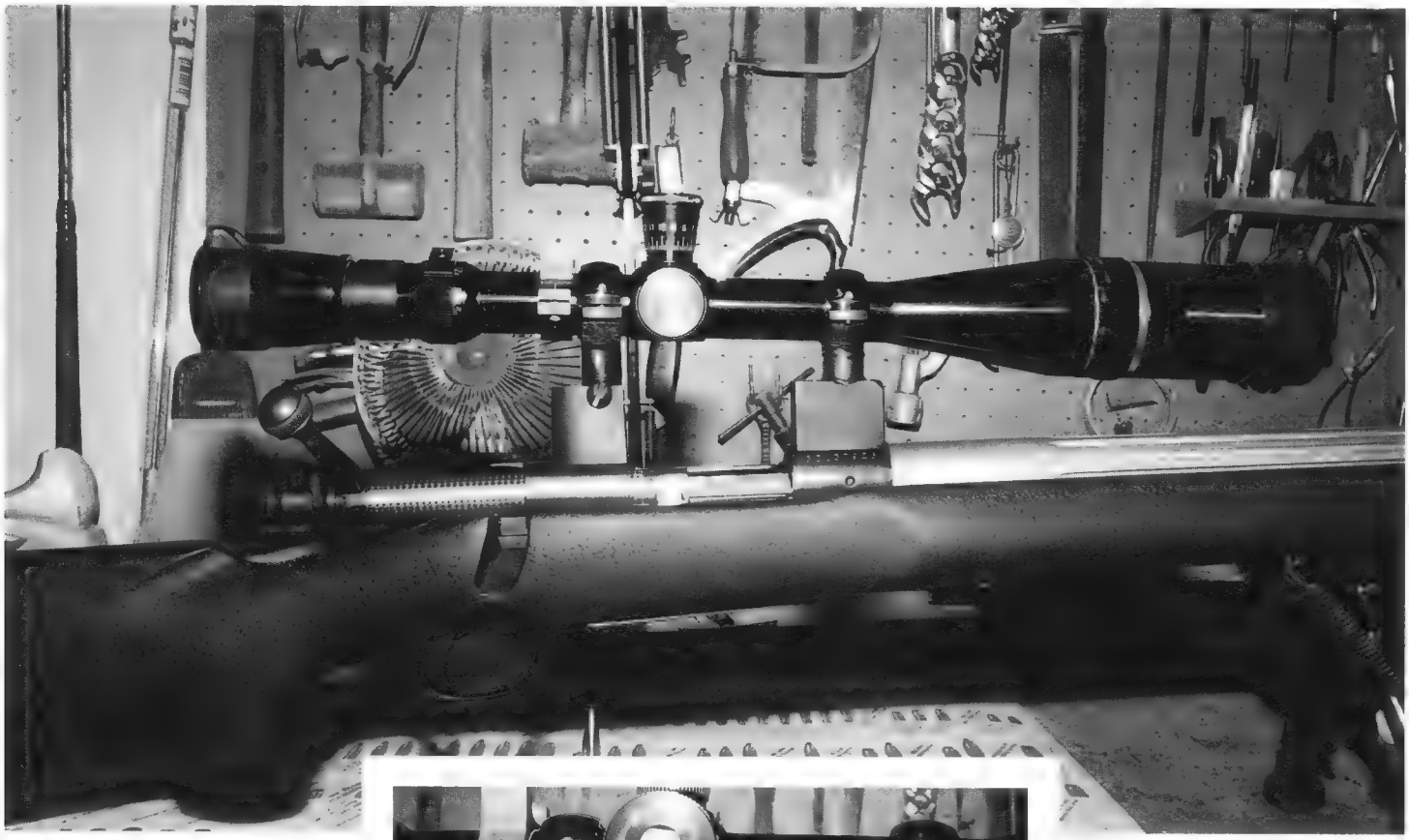
(Editor: Our Bill Shehane-authored article on long range (1000 yards plus) shooting in the very first issue of ***Tactical Shooter*** has drawn a remarkable request/demand for "more of this." Well, we've got another one for you. Enjoy!)

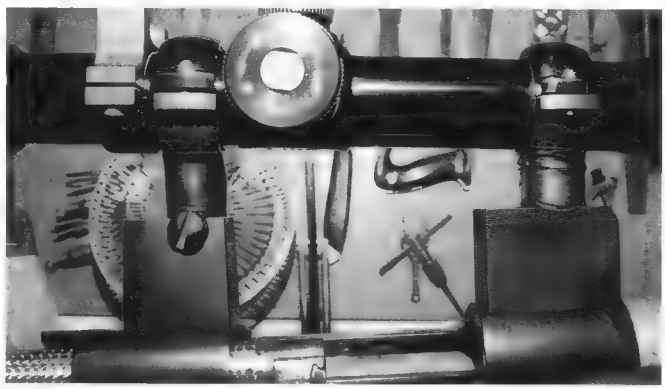
The distinctive sound the big Sierra made as it cut a path through the dense, early morning air will remain etched in my memory forever. I peered through the ocular of the spotting scope and heard the action of the Model 70 Winchester cycle, driving another cartridge home into the chamber of the big gun. Finally, after what seemed like an eternity, a puff of dirt and dust rose into the air downrange, scant inches from the prairie dog the bullet was meant for. As I began to relate the location of the bullet's impact relative to its intended target, I was suddenly interrupted by the report of the gun as it went off again sending another projectile on its way downrange. I glanced at my watch and then back again to the spotting scope in an attempt to record the bullet's time of flight. The shooter cycled the action again, and then all was quiet as we both watched the prairie dog through our respective optics, anticipating a hit. Another puff of dust rose again in the mound just below the prairie dog, signifying the bullet's impact. I glanced at my watch and couldn't believe my eyes. Six seconds had elapsed from the beginning to the end of the projectile's journey at an unbelievable distance downrange.

The sun was just starting to peek over the horizon out on the prairie north of Pueblo, Colorado that day as several more Sierras were launched in an attempt to connect with a prairie dog at the longest of ranges. Bruce Artus, a gunsmith from Bill's Gun Shop here in Pueblo, and I were sitting 7 ft. off the ground on a specially designed shooting bench that was attached to a trailer he had towed into the pasture. I must confess, I was not used to getting up at 4:00 a.m. to go prairie dog shooting, but Bruce told me that at the ranges we were trying to shoot we only had a window of about thirty minutes or so before the mirage would eliminate any possibility of even seeing our targets. I had brought along my Savage 112V 220 Swift but it was still sitting in its case, and would remain there for awhile. It would do me no good to even attempt to use it when the prairie dog town was so far away that I couldn't even see it without the aid of high-powered optics. Bruce's gun was resting on Harris's bench model bipod and looked a little strange with the barrel angled up as high as it was. It also took on an odd appearance due to the fact that the 24X Leupold was mounted in specially made rings and bases that were designed to angle the scope downward slightly relative to the axis of the bore. I guess this is what it takes when your target is over 2000 yards away.

Now then, if you've recovered yet from your jaw hitting the floor, I want to stress to you that this is not a misprint. You read it right. In fact, the prairie dogs Bruce was shooting at that day were precisely 2300 yards from our shooting position. I know that many of you out there

Bruce's Model 70 Winchester, Obermeyer barrel, Leupold-Premier 18-40X, specially designed bases, and altered Burris Posi-Align rings.





A close-up of the action area of Bruce's gun.

are scoffing at this, and to tell you the truth, I was pretty skeptical myself when Bruce told me he had broken the 2000 yard mark on a prairie dog earlier this year. But since I knew both Bruce and Bill and had experienced their gunsmithing abilities firsthand, I knew that if anyone could do it, they could. I have been out with shooters, myself included, that indiscriminately pop away at dogs beyond 500 yards with their standard varmint rigs and waste 20 or 30 rounds before they finally luck one into their target, thus ending the melee. This was not the same. Bruce is a cool, calculating customer that understands trajectory and wind drift like few others, and leaves nothing within control up to chance. He already has the longest recorded shot on a rodent ever witnessed at 2067 yards, and is now trying to best his own record. He didn't get any that morning before the mirage washed us out, but using the methods he does, success is inevitable.

If you're still not scoffing, you might be asking yourself by now, what does it take to hit a target just slightly bigger than a coke can beyond 2000 yards? First off it requires, as you may well imagine, a rifle chambered in a cartridge capable of chucking a very heavy, aerodynamic projectile through variable wind currents accurately (read: very accurately). Since Bruce works at a first-class gun shop here in Pueblo, he has access to the best gunsmithing supplies available. His choice of actions? Winchester's Model 70. As Bruce explained, it is a flat-bottomed action with an integral lug, leading to its time-proven strength and accuracy, which makes it an excellent choice for the task at hand.

Bruce feels that maintaining the integrity of the bullet is one of the secrets to success at long range; therefore, he chose to use one of Boots Obermeyer's fluted barrels at 28", as they have a reputation for treating bullets, shall we say, delicately? Boots' barrels incorporate an angulared odd numbered rifling that theoretically reduces trauma to the bullet. This design puts a land opposite a groove, which lessens bullet distortion relative to the more conventional land-opposite-a-land. This particular barrel is one that Boots unscrewed from one of his own rather well-used competition guns, for Bruce's use. Certainly, it's common enough knowledge now that fluting helps with the rigidity of the barrel, but there has been some question recently whether it actually decreases cooling time as has been theorized. Basic physics states that a larger surface area dissipates heat faster than a smaller one. Simple logic and common sense would allow you to reach the same conclusion. Bruce has the whole package resting comfortably in one of H-S Precision's bench model stocks with

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Way, Way Out There

Continued

an aluminum bedding block, using Devcon's Plastic Steel Putty.

When I first heard Bruce talking about shooting at 2000 yards and beyond, visions of large capacity 30 caliber cases, such as the .300 Mag., Kong, or some such relative of the 1000 yard fraternity, were dancing in my head. Believe it or not though, Bruce is doing his long range shooting with your basic garden variety .308 Winchester in Ackley's Improved configuration, standard SAAMI chambering, with a relatively large .342" neck. His choice was based upon availability, budget, and inherent accuracy of the parent case. As pertains choice of cases and preparation thereof, he uses Winchester brass. Flash holes are deburred with K+M's deburring tool, primer pockets uniformed with Sinclair's primer pocket uniformer, and necks are cleaned up and turned to a thickness of .0135" with Forster's neck turning attachment. An interesting tool that Bruce uses is K+M's tapered case mouth reamer. The idea here is to match the taper of the case mouth as close as possible to the angle of the bullet's boattail, such that it is seated in a manner that ensures no damage to the jacket. This is consistent with Bruce's bullet integrity theory. Certainly we would all agree that random scraping of the bullets as they are being seated into the case could cause problems later with external as well as internal ballistics. Any effect on accuracy, however infinitesimal, can have a big effect on performance at these ranges. Brass is cleaned in Dillon's CV500 vibratory cleaner. Bruce uses Redding's Competition series die set, with a .332" titanium nitride bushing. Cartridges are assembled using Bonanza's Co-Ax press, and a Dillon 550B Progressive press. Charges are thrown with a Dillon powder measure, which according to Bruce renders exceptional accuracy with ball powders. Metered charges are verified with an Ohaus Model 304 scale. Cartridges are checked for concentricity using RCBS's Casemaster gauging tool.

What would you expect his choice of bullets to be? Sierra's 220 grain Matchking, certainly a proven projectile at long range. With a ballistic coefficient of .629 at the muzzle velocity that he is pushing it, it retains energy and velocity very well at long range. When questioned about his selection relative to the increased ballistic coefficient of Sierra's bigger 240 grain bullet, however, he looked me square in the eye, and responded in his typical matter of fact manner, "Why go up when I'm doing it with the 220?" Good point. A second later he chuckled and stated that the real reason was that the energy delivered to the 200 grain projectile is about maximum for the .308's case capacity. He explained that nothing would be gained in the field by using a heavier projectile. After considerable experimentation, 43.8 grains of H380 and Federal 210M Match primers produced the best groups, at a m.v. of 2400 f.p.s.

The heart of the entire system lies in the specially designed bases and rings Bruce has made for the gun. At these ranges he requires a system that will allow the scope to be tilted forward approximately 5 degrees from the bore. Consequently the scope must be raised somewhat to eliminate any interference the muzzle may have with the line of sight. Initially, I though this was the poor man's method of avoiding a ranging reticle, but as Bruce enlightened me, these ultra-long ranges require considerably more than one scope's field of view for target acquisition. You'll have to excuse me for not taking into account the angle of the gun relative to the target. Unfortunately, there is a "slight" problem associated with this mounting system. Since the bases are offset, the rings are no longer in alignment. Normally this would make it impossible to mount the scope without completely redesigning the entire

Some of the more familiar tools Bruce uses for brass preparation including RCBS's Casemaster Gauging tool in the background.

A close-up of the Leupold 6-24X converted to 18-40X by Premier Reticles.

system. Actually, the solution was simple. Burris provided the answer in their Posi-align rings. Their .020" inserts allow for a point to point contact between scope and ring, eliminating the need to align the rings. It's not quite as easy as it seems though, as the body of the rings are still parallel with the action. This necessitates cutting the rings longitudinally so that the scope doesn't bind on the edges of the rings. Bruce freely admits that if it weren't for Burris' special design the alignment procedure would be considerably more difficult. They also present an added benefit of eliminating the lapping procedure for an entirely stress free system. I wonder if Burris, in their wildest dreams, had any idea what their design could be used for?

This arrangement now positions the scope's ocular too high off the gun to allow the use of standard bench technique in shooting. Bruce had to alter his technique to accommodate this unorthodox sighting system. By simply placing his hand on the cheekpiece of the stock he can raise his face high enough to be able to see effectively through the scope, and control recoil. The system, unusual as it may seem, does work though, as evidenced by his results. Bruce initially chose to use a Leupold 24X 1/8th" dot, but has since switched to a 6-24X with an 18-40X Premier (**TS** advertiser) conversion for increased resolving power with a fine-crosshair reticle.

Another question that you may be asking is how does one accurately measure 2000 yards in the first place? Actually, it's very easy if you have access to a Bushnell Yardage Pro 400 Laser Rangefinder. Bruce wrapped some aluminum foil around a large piece of cardboard and had a friend stand at a predetermined point in the prairie dog town holding the cardboard above his head. Bruce then walked off, taking readings with the rangefinder as he went. When he got to 500 yards he signaled to his friend to come up to him and they repeated the procedure six more times until they had accurately measured 3000 yards. This formed a basis from which any measurement can be taken from the initial point to any other spot in the dog town with a high degree of accuracy.

As important as the technical may be, everything goes out the window when Mother Nature is in an uncooperative mood. No other shooting discipline is affected as much by weather as extreme range shooting. Any irregularity encountered is magnified to a great extent way out there. Bruce explained that any inconsistency in wind velocity or misreading of mirage will send the bullet to a different impact point downrange. Wind flags are a necessity to keep track of downrange conditions as much as possible. The ground must also be very dry, such that the resultant dust cloud after the shot can be utilized to determine bullet impact.

Bruce likes to be in position and ready to go early in the morning when the first sign of activity is detected in the prairie dog town. From that point until mirage distorts the target beyond the shooter's ability to see clearly, time is very limited, sometimes as little as thirty minutes. At that point the shooting is over for the day and you might as well pack it up and call it quits. Bruce explained that as mirage builds, it can act like a fog bank, coming and going unpredictably. He says that the combination of mirage and variable wind

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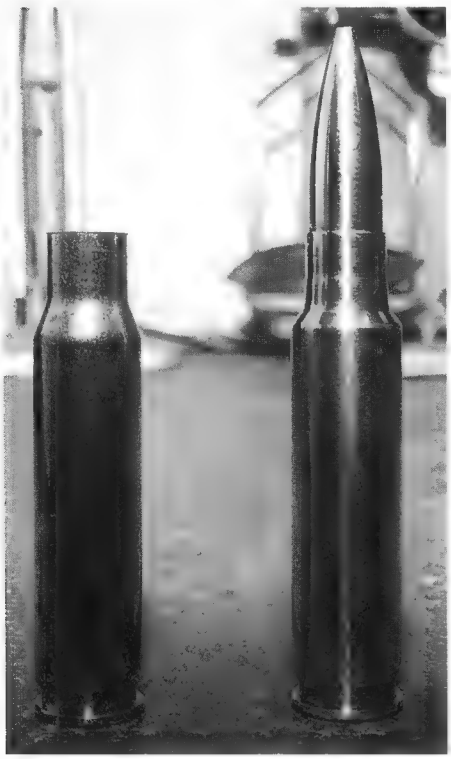
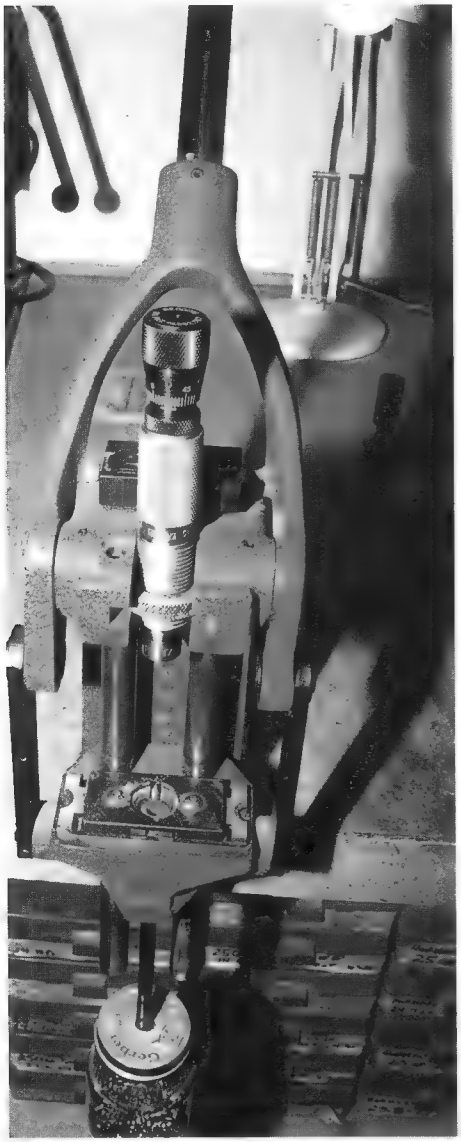


Standard .308 Winchester next to Ackley's Improved counterpart.

The .308 Ackley Improved next to Sierra's 220 grain Matchking, and a recovered bullet on the far right.



Way, Way Out There

Continued

currents govern the outcome of the shooting more than any other factor.

His method of shooting is rather interesting. He uses Harris' excellent bench style bipod, which allows him to adjust the forend to be perfectly level with the aid of D.H.B. Products' anti-cant device. Once his target is located, he watches the wind flags until he feels confident that elevation and windage are adjusted in accordance with the conditions. At that point he begins shooting, observing point of impact each time, making a quick adjustment, then shooting again as soon as possible, in an attempt to send the bullet downrange as close as possible to the same conditions as the shot before. Six seconds may not seem very significant to those not associated with long range shooting, but it doesn't take Mother Nature long to change conditions to suit her fancy. The slightest change in wind velocity will blow the bullet off course several feet at 2000 yards.

When the shooting was over for the day we went downrange to see if we could find any of the bullets, as Bruce says they will skip along the ground 40 or more yards and can frequently be found intact, hardly any worse for wear. Walking around on hot days out here can be somewhat hazardous, as Bruce explained that rattlesnakes abound in prairie dog country. They love prairie dog mounds and often hole up in them to escape the midday heat. Bruce was well protected with a pair of homemade rattlesnake chaps he put together himself with thick pliable plastic taped round his shins. Normally I'm not much concerned with them but when Bruce told me he will sometimes run across five or six in the course of a day's shoot, I must admit it kept me thinking.

The impact craters in the dogs' mound that he was shooting at were unmistakable and proof positive of Bruce's ability to shoot accurately at these ranges. He has already begun altering the scope rings for even more range, and believe it or not, he even has the prairie dogs picked out he will be shooting at when he attempts to break the 2500 yard mark.

For those of you still scoffing, there's no question that a good degree of luck must be worked into the equation, especially when working so closely with, and at the mercy of, Mother Nature. But we all would certainly have to agree that even attempting this with less than the best of equipment would be an exercise in futility.

Shooting with Bruce that day was truly a humbling experience. You can bet I'll certainly never look at a successful 500 yard shot from the same perspective again. Doing what he does is so far removed from standard varminting that it almost seems like a different agenda altogether. I guess it just goes to show you though, the sky can literally be the limit when you really put your mind to something.

Steve Hugel
Pueblo, Colorado

Left: Bonanza's Co-Ax press with Redding's benchrest seater die installed.

Below: A view of Dillon's 550B progressive.

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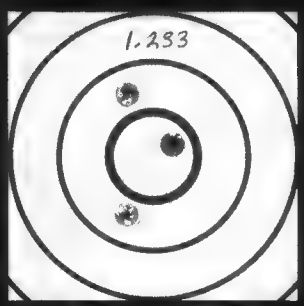
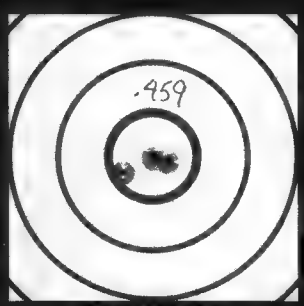
PS columnist Dan Hackett provided BlackStar with these targets to illustrate the aggs posted by an A-Bolt .25-06 before and after BlackStar. These targets were shot at 100 yards.



Before BlackStar



After BlackStar

Hackett's load was a 100-grain Nosler BT over 56 grains of H4831SC and a Federal 210M primer.

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The Tactical Scope Reticle

BY DAVE LAUCK OF D & L SPORTS SMALL ARMS TRAINING ACADEMY

Scope reticle development in recent years has been substantial, and often aimed at the tactical marksman's arena. Some of the reticle designs have been useful, some have been overly cluttered, and some are simply unrealistic.

It is a matter of using the right tool for the job at hand. Unfortunately, many shooters follow trends in shooting equipment based on what seems to be popular, rather than selecting equipment which has been proven capable of delivering reliable field performance. Scope reticles with an overabundance of lines, dashes, dots, and posts being promoted as "must have" tactical gear by salesman, rather than field-experienced shooters, violate the principal of keeping equipment as simple as the job will allow. Poorly-designed equipment has been repeatedly observed to fail during field operations and training courses at the Small Arms Training Academy.

The situations a tactical marksman is expected to cover range from close and fast to far and precise. Expecting one rifle/scope/reticle combination to best handle all of these situations is simply not realistic. Choosing a middle of the road rifle/scope combination does not allow for the best performance in fast action, or far and precise shooting. A common example of this middle of the road equipment selection is a compact, lighter weight bolt action .308 with a low-powered scope. In some situations, it will obviously work fine, but in many situations it will simply be too much, or too little. A light compact accurized semi-automatic carbine will be quicker on multiple targets at close to moderate distances and be more adaptable to fluid tactical situations. A dedicated precision rifle would be more efficient from the more distant static firing points where we are often positioned.

The middle of the road rifle/scope combination may be effective for the statistical average seventy-five yard police marksman's shot. However, professional marksman are not content with average performance. Dedicated marksman will determine their expected area of responsibility and train for best performance throughout the expected use range. This expected use range may be 0–500 yards, or even 0–1000 yards. Yes, the longer distances are statistically unlikely, but not unrealistic, especially for rural marksmen. Training should be more difficult than expected live call-outs. Train hard, fight easy.

A two rifle concept is taught at D & L S.A.T.A. for the tactical marksman. It allows selection of the right tool for the job at hand, without getting so complicated that proficiency will fade. Both rifles' capabilities can be overlapped in their expected-use distances so the "average" shot can be handled with either. This concept allows for improved performance throughout the expected area of responsibility for the tactical marksman.

The new D&L aluminum-stocked tactical rifle.

Different optics will be fitted to the two rifles. Optics selection should be based on the primary expected-use range of each rifle. On the fast action rifle/carbine, a low mounted compact variable in the 2–7 X range works well. It allows for a wide field of view at close range and more magnification at longer distances to help with target identification and shot placement. The point blank zero capability of a low-scoped .223 fits the tactical marksman's expected use distance nicely.

The 24-hour capability required of a tactical weapon should not be overlooked. Daylight, low light, and darkness should all be considered when selecting an optic. Having a selective illuminated reticle, as well as white light illumination capability, without dismounting the scope is very important.

The precision rifle, expected to be primarily used from a static perimeter position, could use more scope magnification, but without giving up the capability of ample field of view. Both can be had with a reliable modern-variable scope. Opinions on both sides of the high/low tactical scope magnification issue can be obtained. Too often third hand horror stories are related to support one side or the other. Often operator error and/or improper equipment availability was the bigger problem. Trying to use a heavy bolt-action with a fixed 10X scope down a dark 25 yard hallway is a poor equipment choice. Positive facial identification of a suspect, or even reading his tattoos to acquire I.D. on an unknown suspect, are a plus for more magnification. The best of both can be had with the two rifle concept.

The zero-holding capability of any optic selected for tactical use must be thoroughly tested and evaluated. This of course should be completed prior to putting the rifle/scope combination on "call-out" status. Much debate has been given to the durability of variable versus fixed power rifle scopes. It is an area that should be proven reliable by each tactical marksman while utilizing the exact equipment that they will carry for duty use.

Zeroing and turrets are other areas for consideration. The fast action carbine will be best served by low turrets and establishing a point blank zero. The precision rifle, which will be dialed in for precise ranges, works well with a scope featuring heavy duty tactical turrets. A reticle design chosen for each scope is important. Too often shooters arrive for training with an overly complicated, cluttered reticle in a fast-action carbine. Dots, lines, and hash marks in a fast-action carbine scope is unwise. Expecting to use the overly popular fixed power 10X Mil Dot scope during close work is unrealistic. A standard duplex reticle with only one center point to focus on

Continued on next page

Known distance range data development (left) provides the required information to make the single cold unknown condition shot (above).

The Tactical Scope Reticle

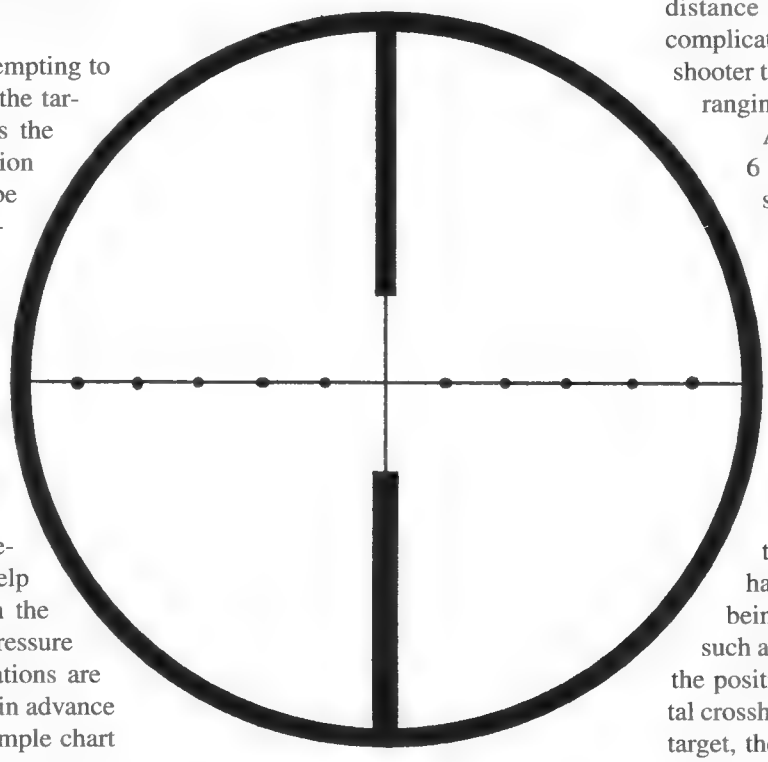
Continued

minimizes problems when attempting to quickly align the reticle with the target. Keep things as simple as the job will allow. Reticle selection for the precision rifle should be one of useful design for ranging, wind deflection compensation, and target lead, but still not be cluttered. No mathematical computation should be required for its use.

Often times shooters will arrive for training with good intentions, a pocket calculator, and a variation of some mathematical formula designed to help them intersect the target with the bullet. They often fail when pressure is applied. Any time computations are required, they should be done in advance of field work and placed in simple chart form for call-out activity. Better yet, a more simplified style of field practical shooting is preferred. The goal is to hit the target with the first cold shot, not impress people with theories and mathematics. I claim no expertise in mathematics or science, only an interest in first round hits for the tactical marksman under realistic field conditions. Tactical marksmen should have the same interest in performance, rather than theory. The current training curriculum at D & L S.A.T.A. for precision rifle and fast action carbine requires no math computations, just dedicated range work to learn your shooting systems characteristics. Once that has been firmly established by live fire, solving the bullet-intersecting-the-target problem is greatly simplified.

I have designed what has become known as the D & L Tactical Reticle to assist shooters in obtaining hits with the precision rifle. The reticle is efficient for deflection compensation, leading, and ranging without being cluttered or complicated. The reticle is applicable to Leupold scopes.

The reticle pattern maintains a duplex vertical hair and a standard horizontal crosshair. The horizontal hair contains a series of dots, 3 to 6 in number, on each side of the vertical hair. In a second focal plane reticle scope, the dots are spaced 3 inches apart on maximum magnification at 100 yards. In a first focal plane scope the spacing is consistent at all magnifications. However, the "growing" first focal plane reticle is apparent and distracting to many shooters. With a second focal plane scope the shooter will have to be sure to make all estimations on the same magnification to assure accuracy and consistency.



The D&L tactical reticle.

M.O.A. calculations have proven to be complicated for many part time shooters. Often times modern police training budgets do not allow for extensive training, so a performance training program requiring less range time and easy understanding must be adopted. Giving only a brief overview of a more complicated system will only confuse the new shooter. Keep it simple and field effective by dealing in inches. For example: say your scope is a 6.5 – 20X with the D & L Tactical Reticle, the scope is set on 20X, and your dot spacing is 3 inches at 100 yards. The distance between the vertical wire and the first dot is 3 inches at 100 yards on 20X. The space between the two center most dots (one on each side of the vertical hair) is 6 inches at 100 yards on 20X. These dimensions give you a quick distance reference without requiring complicated calculations or requiring the shooter to break his cheek weld for laser ranging the target.

A human face is approximately 6 inches across when facing the shooter. If the face brackets between the two center most dots, the range is 100 yards. If the face brackets between one dot and halfway between the vertical hair and the other centermost dot, the range is 150 yards. If the face brackets between a centermost dot and the vertical hair, the range is 200 yards. Distances beyond 200 yards are handled by use of the vertical hair being positioned at a specific point, such as the top of the head, and noting the position of the intersecting horizontal crosshair on the target. The further the target, the lower the intersection will be on the target. This method can be used on any object you feel you may encounter near a crisis site, such as a car tire, standard doorway, window frame, etc. Take these commonly encountered objects to a known distance shooting range and develop your data book with sketches of expected items and the positioning of the reticles cross intersection at different distances.

Some shooters arrive for Advanced Precision Rifle class with first rate mechanical equipment, but without the knowledge gained from known distance data development. First example: A shooter has an accurate, repeatable rifle system and a high-tech laser range finder. He lasers the target and gets an accurate reading of 350 yards. Now what?? If he didn't develop live fire known distance data for his rifle, he won't know what compensation to apply to his turret. (Non-confirmed computer drop charts are not acceptable on live call-outs.)

Second example: A dedicated shooter has precisely developed all his expected use distance "come ups" for his shooting system on a known distance range. Great. Now he is faced with an unknown distance shot and has no proven system for range estimation. He won't know exactly what to apply to his turret because he doesn't know the exact distance to the target.

Bottom line is you need both, accurate ranging capability and come up information. These areas should be addressed in your training programs. To allow you the field expedient information you will need to make first shot hits, this information should be contained in a field data book, along with wind deflection information and other atmospheric considerations. You need a combination of information developed from realistic training along with reliable field equipment to consistently intersect the target with the bullet on your first shot.

Do not get complicated when it comes to wind deflection compensation. Many formula wizards and M.O.A. dialers get lost in their mathematics and miss the shot under minimal range pressure. Live situations would probably exert even greater pressure on the shooter and cause more likelihood of a miscalculation. Wind is most often a variable factor and requires field practical methods to effectively compensate for its effects. This is not an area to apply unproven theories and more mathematical formulas. Keep in mind we are looking for field practical information for use in live call out situations, not for use in known distance target range competition complete with wind flags. Trajectory is fairly consistent while wind is normally a varying factor.

My suggestion would be to choose an efficient bullet and establish a no wind zero a 100 yards. Precisely learn your come ups in small increments on a known distance firing range. The no wind trajectory pattern will be quite consistent provided the tactical marksman maintains a precise zero throughout the seasonal changes in his expected use area. A wind deflection chart should be developed utilizing your exact load and shooting system in your environment. This is best accomplished by chronographing your shooting system and individual ammunition in your environment. The data you develop will only be accurate with this particular shooting system and ammunition and the environment that it was developed in. Any changes in any of these components will require the tactical marksman to reconfirm his data. The wind deflection chart should be computer generated and formed into a field practical table. Once this is complete, there will be no mathematical calculations required under field conditions.

Handling the unknown distance shot is greatly simplified provided the dedicated field marksman obtains the necessary known distance range data. For example: In the field you are faced with an unknown distance target and a 20 mph wind. Range the target with a laser range finder or your preferred accurate method. The target range is determined to be 400 yards. Estimate the wind speed and direction. For this hypothetical example we will say the wind is 20 mph in a direct 90 degree crosswind. Refer to your wind chart and determine the computer calculated deflection. In this hypothetical example we will say the computer calculated deflection is nine inches. This example can be solved without resorting to any formulas, M.O.A. calculations, or shooting voodoo. Simply set your turret at 400 yards. The click value at 400 is unimportant, and so is counting the number of clicks on the turret. This is so because you are a dedicated field practical shooter and you have already transcribed the data developed on your known distance range to a simple 4 on your turret. Your turret should be sufficiently marked with all the known distance come ups that you have established during your dedicated data development. This eliminates the need to count clicks on your elevation turret and simply allows the shooter to set the turret on the indicated range. Now, address the wind while maintaining your no wind zero setting on the windage turret. You have determined you need nine inches of wind deflection compensation. You do not need to know how many windage clicks equal nine inches a 400 yards. You do not need to know how wide your dot spacing is at 400 yards. (If you insist, 1/4 inch click value at 400 yards is 1 inch per click, and the dot spacing on the D & L Tactical Reticle is twelve inches. Unnecessary information.)

You have decided to go for a torso shot and determine the torso is about 18 inches wide. Torso size of the target does not change. It does not matter if the target is at 100 or 1000 yards away, it is 18 inches across. It doesn't matter how much of your target the dimensions of you particular reticle covers. It is still an 18 inch target. If you need 9 inches of wind deflection compensation, you need half a torso width. Center the crosshair on the torso, move it in to the wind to the edge of the target and you have nine inches of wind deflection compensation. Hold that position and check for the closest horizontal hair dot placement. In some cases, choosing a dot on the horizontal hair would be the preferred focus point for the shot delivery. If a shot is fired, and misses, it can immediately be followed up with additional compensation from the just used aiming point. No dialing, no math, just a simple hold adjustment from the dot you just used.

In our example where nine inches of compensation is required, and the D & L Tactical Reticle is used, the shooter could choose his preferred focus point in the reticle. The reticle center cross would be aligned with the side of the torso and the closest dot would be twelve inches into the target. The dot may align with the shirt pocket and provide an excellent reference point. If not, go with the side hold. Often times the necessary center cross hold off will place a dot where it works extremely well. The Mil Dot reticle on 10X and lower magnification, is often too coarse for a fine hold. The thick black side bars can also block out more of the target than is desired.

There are of course other factors to consider when calculating a shot. Whether it be atmospheric conditions or the angle of the shot, what's most important is keeping all compensations accurate and field practical. Adding unnecessary complications to already complicated live call-outs can lead to a missed shot and mission failure. Good shooting, D & L Sports.

About the Author: Dave Lauck is a front-line law enforcement officer with 2 decades of experience, gunsmith, and winner of numerous tactical shooting events. His performance shooting technique is taught at D & L Sports Small Arms Training Academy in Gillette, Wyoming. D & L Sports is the host of the Tactical Marksman's Match, a proving ground for what works and what doesn't. One of the author's recent books, "The Tactical Marksman", can be acquired through the Precision Shooting book club. Information on the Tactical Marksman's Match and S.A.T.A. training courses can be obtained from D & L Sports, PO Box 651 Gillette, WY 82717-0651. Phone: (307) 686-4008.

The Importance of Neck Cleaning & Deburring

BY M.L. McPHERSON

Synopsis: Firing a cartridge tarnishes case neck interiors and introduces residues onto that surface; reloading process can introduce other substances into case necks. Since these substances can alter the friction characteristics of the brass, handloaders should give due consideration to cleaning case neck interiors. Equally, the case mouth should be properly deburred before bullet insertion. Both cleaning and deburring are particularly important to the handloader using moly-plated bullets.

This subject has been on my mind for some time now. Yet another call from a nascent moly-coater prompted this short dissertation. To the serious shooter, the importance of uniform and consistent neck-to-bullet tension (bullet pull) cannot be overstated. Equally, the importance of proper inside neck deburring is ill understood by many experienced handloaders.

Cases that are not properly deburred and polished will damage the moly-plating as the bullet is seated. This is particularly true where the moly-plating process does not include a properly applied layer of carnauba wax, which acts as a surface hardening agent. Those who doubt the utility of the wax coating should use an inertial bullet puller to see how much damage the seating process does to the moly-plating on their unwaxed bullets.

Conversely, consider a bullet that I have properly molybdenum-disulfide and carnauba wax plated (according to NECO's instructions). When I have properly cleaned, deburred and polished the case neck interiors, I can repeatedly seat and pull that bullet from one case after another with essentially no loss of the moly-plating. This is true, even when these case necks are fully 0.004" smaller than bullet diameter. Explicitly, the handloader who wants to enjoy the full benefit of moly plating must ensure that the plating is not damaged or destroyed as he seats the bullet. When properly applied, the hard carnauba wax protects the moly but it cannot overcome the cutting edges produced by inside burrs in a case neck.

Consider inside case neck deburring: unless the handloader uses a combination trimmer and deburring tool, such as is available from RCBS in 22- and 30-caliber (and what a nifty tool that is), trimming a case to length introduces very sharp and very hard burrs inside the case neck. Unless the handloader removes these burrs, seating bullets will scratch the surface of the bullet shank. This scratching results in significant (accuracy affecting) bullet damage with attendant shot-to-shot variations in bullet pull. These effects destroy shot-to-shot uniformity and accuracy suffers.

Deburring with standard tools often introduces a wire edge inside the case neck. This edge forms where the trimmer rolls a fine layer of brass ahead of itself. Failure to remove this "wire" has equally deleterious effects upon the ammunition.

Besides introducing a more benign angle inside the mouth of the case neck, K&M Services' 4 degree deburring tool does not introduce this wire edge. For these reasons, I highly recommend this tool. As with any deburring tool, it is only necessary and useful to remove the burrs formed in the trimming stage. I set the K&M tool so that it only advances about 0.015" into the case neck. Further cutting unnecessarily thins the case mouth and provides no advantage.

There is another problem with cases that have been fired or where handloading practices have introduced lubricants into the case neck: a general reduction of friction and the loss of uniformity in bullet pull from one cartridge to the next. Again, we are concerned with uniform bullet pull, which depends upon uniform conditions within the case neck interiors.

Firing a cartridge has two obvious detrimental effects upon the case neck interiors. First, it introduces a certain amount of tarnish. Tarnished brass generally has a lower coefficient of friction, compared with untarnished brass. Second, powder and primer residues are burnished onto the case neck interior. These residues further reduce the coefficient of friction.

Everything we know about internal ballistics suggests that having too much bullet pull in conventional handloads is essentially impossible. With one glaring exception, if the handloader can seat the bullet without damaging it or altering the case shoulder or body, the more bullet pull he can achieve, the better his loads are apt to shoot. That exception is certain benchrest loads, where cartridge overall length is deliberately left long enough to drive the bullet well into the rifling as the bolt is closed. This technique does two things: first, it provides for a more precise bullet-to-rifling jump distance (essentially zero); second, it substitutes engraving force for bullet pull (the former is greater by an order of magnitude).

All conventional loads need sufficient bullet pull to prevent the primer's blast from moving the bullet. Lacking that, shot-to-shot uniformity suffers, often dramatically. With a bit of reflection on the above discussion, it should be obvious why any of the following features in a case neck are detrimental to accuracy: burrs, rough edges, tarnish and deposits.

We have already covered deburring, which must be done to many new cases and all conventionally trimmed cases. (High end and match-grade cases are usually trimmed to a very uniform length and then deburred at the factory.) Now we will consider methods of polishing the rough surface left by the deburring tool while removing the deposits and some of the tarnish formed by firing.

One method involves use of a stainless steel bore brush of proper diameter. (This might be the only safe use for these things, any use in a barrel seems ill-advised.) The idea is to chuck the brush into a fixed power drill of some type, run that at a moderate speed and pass the case neck over the brush several times. This works quite well at removing most deposits and surface tarnish but it will not

remove fluid lubricants. I see two other problems with this system. First, these brushes wear out quite rapidly. This gets expensive when large numbers of cases are processed. Second, these brushes do not provide a finely polished finish, which seems preferable.

The method I choose involves a standard brass brush but of smaller diameter — a 7mm brush in a 30-caliber case, for example. The system involves tightly wrapping a sufficient layer of 0000 (four-ought) steel wool around the brush to form a very tight fit inside the case neck. Then use this tool, as described for the stainless steel brush. Periodically, the steel wool must be replenished. Such replenishing costs very little in either time or expense. This system rapidly removes any minor burrs and residues. It also removes the wire edge formed by conventional deburring tools. Finally, it provides a very fine polish to the case neck interior.

Unlike the stainless steel brush method, this system can remove a modest amount of fluid lubricant but it cannot deal with more than a smidgen of same. Case necks having too much lube will contaminate the steel wool, which will then contaminate the next few cases treated.

The secret is to avoid getting any hydrocarbon based fluid lubricant inside the case neck … avoid this like the proverbial plague. Either graphite or, preferably, molybdenum-disulfide are better choices for case neck lubrication. Like any other effective lubricant, residues of these will also reduce bullet pull, which is not desirable. However, in properly treated case necks, this friction reduction will be quite uniform.

When possible, I prefer to use a titanium nitride (TiN) plated neck sizing bushing combined with a carbide expander ball. Such a combination requires no case neck lubrication and provides the highest possible level of uniformity from one case to the next.

Using this system (as available from Redding), proper sizing is as follows: the bushing sizes the case neck sufficiently so that it is just slightly enlarged as it is drawn back across a carbide expander ball that is properly smaller than bullet diameter — correct bullet-to-expander difference is about 0.002" for conventional bullets and about 0.004" for moly-plated bullets. This system of neck sizing minimizes the effects of variations in case neck hardness, providing the most uniform neck tension from one load to the next.

The important point to this discussion is that no case neck lubrication is required; therefore, potentially harmful contamination of case neck interiors is not an issue. If a fluid lubricant has contaminated your case neck interiors, either tumble those cases in very slightly dampened (clean and untreated) corn cob media or use some other method to remove that lubricant properly.

Lanolin based lubricants (such as Tombstone's excellent non-aerosol *Wyatt's Lube*, 1-800-387-8126) are quite excellent because they are so easily removed with corn cob media, plain water or alcohol.

Consider taking the extra time to properly debur, polish and clean the case neck interiors on your serious loads. For this effort, you will be handsomely rewarded at the shooting bench.

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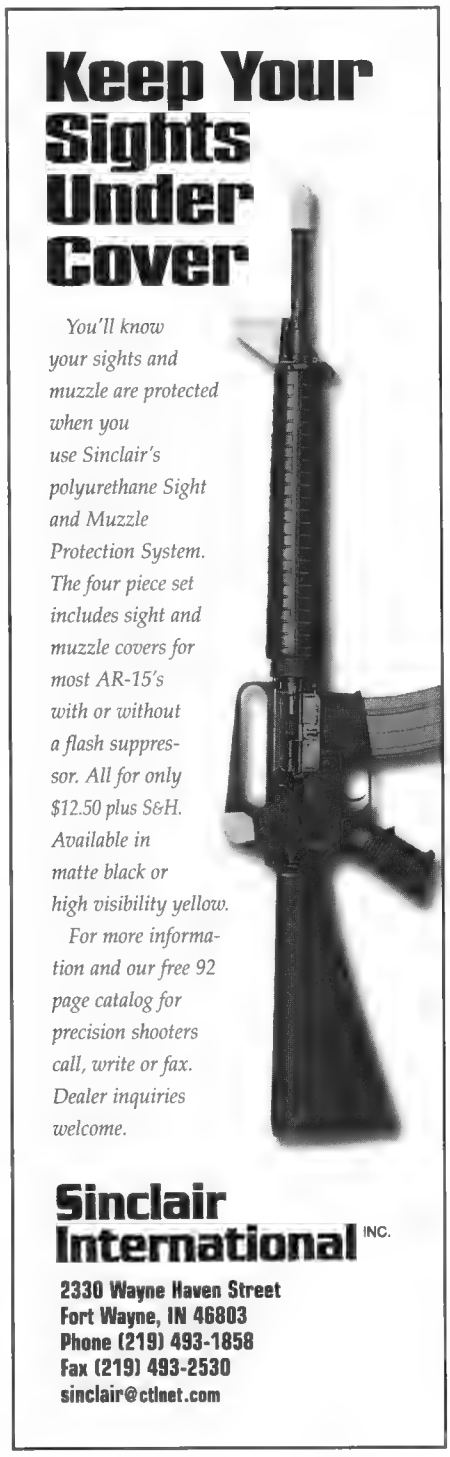
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Seeing is Believing:
Laser Eye Surgery For The Shooter

BY TOM LINTNER

As I thought about this story it dawned on me that it actually began 30 years ago when I was 14 years old and had started to think about what I wanted to do when I grew up (thank God that never happened).

I had received my first pair of glasses when I was 12 years old. I didn't think much about the event until I started to explore the things I wanted to do. All those things, which I was to later find out, I couldn't do because I was not able to write "20/20" on an application.

Although this was the era of Vietnam I was pro-military (talk about not fitting in with my peers) so I explored the possibility of the military academies. To this day I remember the statement on vision requirements; "minimum visual acuity of 20/30 corrected to 20/20 bilaterally." So much for the academies. Since I had had three cousins who worked for the New York Police Department I considered law enforcement...wait, I remember; "20/20."

Then as I entered college I started to take flying lessons. Even though I later worked as a commercial pilot and flight instructor for many years and thousands of hours in the air, I was never able to fly for a major airline because, yup, you guessed it, the companies required 20/20 vision. (Technical footnote: medical requirements for pilots vary with the type of license you hold. For example a private pilot's license is less restrictive than the Airline Transport license which I hold. However, the FAA will approve a waiver to certain vision requirements if you can demonstrate the ability to see with the required accuracy).

So as time went on I eventually gave up on my "Walter Mitty" dreams, got a job with Uncle Sam that's involved in aviation and started a shooting "career" on the side.

As a shooter, I became even more aware of the need for good vision, the effects of various factors on how the eye works, and all of the tricks any shooter, especially an aging one takes, (wait, let's call that a "maturing one"), to try to improve his or her vision. As the years passed a couple of things started to happen. First, my vision had been deteriorating and reached the point of being 20/400 with a significant astigmatism. Then my competition shooting was becoming more and more "challenging" by the inability to find the right prescription that fit all the conditions you could experience on the range. Finally, I started to get involved in tactical shooting for ***Tactical Shooter*** magazine.

Tactical Shooter also started me thinking about the impact of poor vision on law enforcement and military personnel who need their eyes to stay alive. I *know* what it's like to have glasses fog up, rain streak down glasses and block vision, wearing goggles over glasses, or even trying night vision equipment over glasses. In short, in a tactical environment this limitation might place the user at an extreme risk. I also *know* what it's like to lose a dream because you can't say "20/20" on an application. Finally, I *know* how those risks could be reduced and how you can help make those dreams can come true for someone. That knowledge comes from my experience with laser eye surgery at the Bochner Eye Institute in Toronto, Canada, and this is the story of how dreams can happen.

THE SCIENCE OF THE EYE

In order to better understand just what the laser eye surgery procedure is and what it can accomplish, we need to review, in simple terms, some of the anatomy of the human eye.

The eye is a globe whereby light enters through a cornea, shines through an internal lens, and is reflected upon the retina which is located on the "back wall" of the eye. The image on the retina is then transmitted to the brain and we "see."

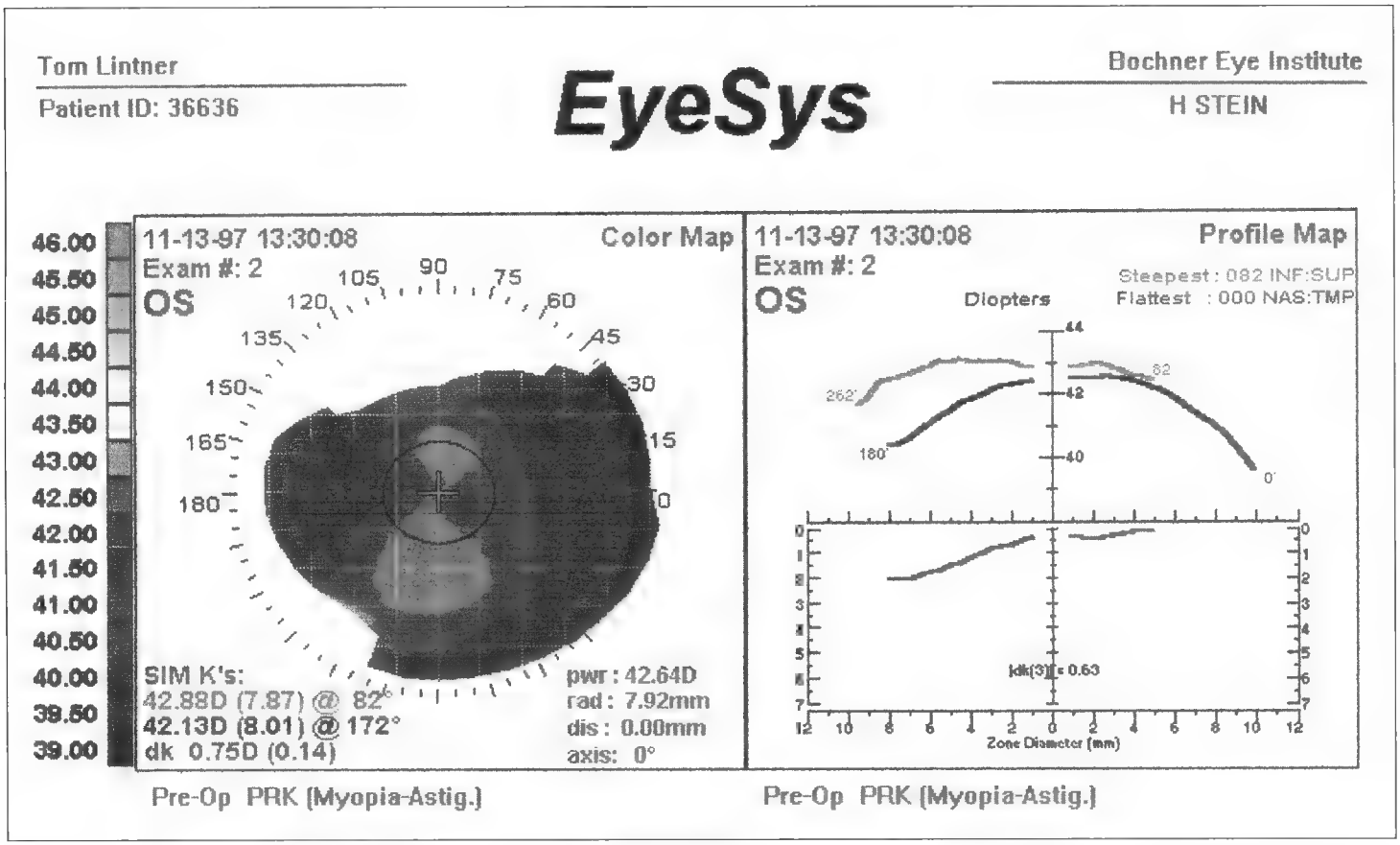
Going into slightly more detail, the shape of the eye can vary between people at different ages. It can be "perfectly" shaped or, in the case with people with common vision problems, it can be elongated or compressed. By using a little literary license, a reasonable example of what I am describing could be seen with a egg. If we were to say the larger, round part of an egg shell represented the rear portion of a "normal" eye, then the pointed end of the egg would be an example of an elongated eye.

The cornea of the eye, the translucent cover protecting the lens, controls the point were the light is focused. If the eye is elongated (near-sighted), the light ends up being focused in front of the retina (remember, the eye is too long) and the image is out of focus. If the eye is compressed (far-sighted), the light is focused beyond the retina and again, the image is out of focus. Normally, this can be corrected with the use of external lenses or, thanks to laser technology, by reshaping the curvature of the cornea and the cellular, or micron level.

By making an extremely minute change in the curvature of the cornea, without doing any damage to the wall of the eye or the lens, laser surgery is able to greatly improve vision. In many cases (but not all) this improvement can allow the individual to see with 20/20 vision.

THE LASER PROCEDURE

At this point it's important to state that I am NOT talking about radial kertotomy (RK), which is a procedure developed several years ago whereby the shape of the eye is changed by a series of incisions (read: cutting with a knife) around the



This is the pre-op profile of the eye that measures the "Topographic" contours of the cornea and indicates levels of astigmatism. The "hour glass" shading you see on the left side is where the astigmatism was present.

cornea. I cannot even think about that without my stomach turning.

My experience first began with a discussion with my current ophthalmologist, Dr. Ken Karlin, of Reston, Virginia. Dr. Karlin and I had been discussing different eye procedures for some time when he finally suggested I contact Dr. Harold Stein of the Bochner Eye Center in Toronto, Canada, about the laser procedure.

It seems that the Canadians, and specifically Dr. Harold Stein, had been perfecting this procedure for many years and were significantly ahead of US technology and experience with the laser. Dr. Stein and his associates have performed over 15,000 procedures so, with that type of endorsement, I was off to Canada for a consult.

The Bochner Eye Center is a state-of-the-art center for eye care near the University of Toronto. They had machines there that I had never seen before which could map out the contours of the cornea, the exact amount of correction needed to adjust vision, and the measurement of corneal astigmatism.

I was given a full exam, told I was a good candidate for the procedure, advised of the entire process, and went home to think about it. Two weeks later I returned for the surgery and it will probably take longer to read about the process than it took to actually do it.

I was given another exam to make sure all of the parameters for the correction are accurate. I was then taken into the laser room, which looks more like a dentist's office than a surgical suite (ah, perhaps the example of a dentist's office may not be too reassuring to folks, especially if they've seen The Marathon Man with Dustin Hoffman).

After I sat down I was told to put my head back into a "bean-bag" which kept it still. (technical point: the laser is designed so that if you move at all it will automatically shut down without damage to the eye). Eye drops were administered to numb the eyes and Dr. Stein placed a speculum (sort of like a clamp but totally painless) around the first eye to keep it open. Now honest, I cannot tolerate the glaucoma test where they shoot that burst of air into the eye but this was not a problem at all.

The next step, the removal of the epithelium, was the most psychologically difficult part for me. The epithelium is a very thin protective membrane that covers the cornea. Before the laser can get to the cornea this must be removed and this was accomplished by brushing it lightly with a small, soft, rotating brush (it reminded me of the type you see the dentist use to polish your teeth). As uncomfortable as this sounds, I felt absolutely nothing and it only took seconds.

Then I was told to look at the red light above my head. This was a VERY VERY blurry, out of focus, red smudge. Dr. Stein then "fired" the laser and, again, I felt nothing. However that VERY VERY blurry light became just a VERY blurry light. After a small correction of the laser, Dr. Stein fired it again (I still felt no sensation) and the VERY blurry light became just a blurry light. After the third time it was just a red light...my vision

Continued on next page

Seeing is Believing *Continued*

without glasses had been corrected. Entire time for the one eye: less than four minutes.

The second eye was done immediately after the first and when I got up from the chair I could read the chart on the wall in front of me. Prior to the procedure I had not even been able to see the chart on the wall let alone read it! I had sat down in the chair with 20/400 vision and astigmatism and got up with 20/80 vision and no astigmatism. I left Canada two days later after two normal follow-up checks with 20/60 vision and returned to Dr. Karlin for a series of four post-op follow-up exams that are part of the process.

Throughout the following eight weeks my vision slowly began to improve. I was driving (daylight only) after the first week. At the third week my vision was 20/30 in one eye and 20/40 in the other. By the eighth week, and final visit to Dr. Karlin, it had stabilized at 20/20 with no refractive error.

Then I started shooting.....

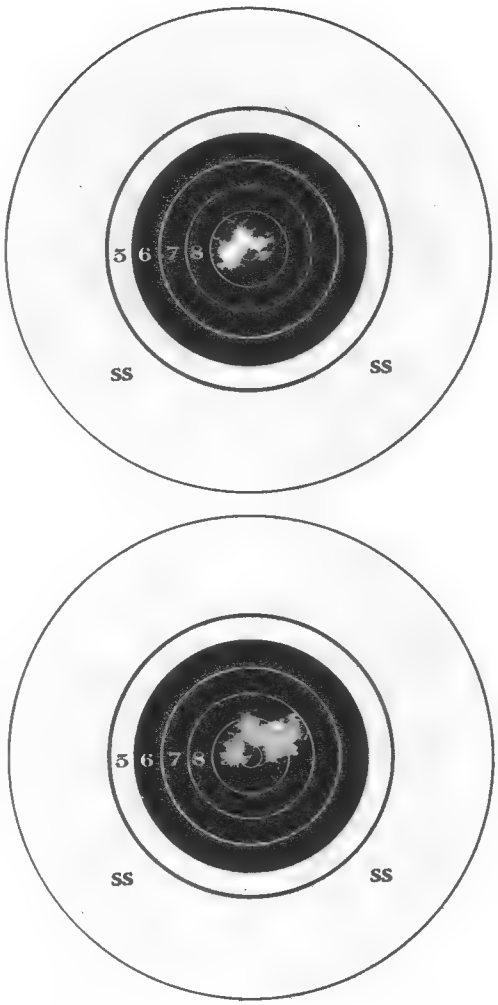
THE FIRST SHOT

I clearly remember the very first shot with my "new" eyes. I looked at a front sight that had never been so clear before and broke the first round. But something was strange.... I saw something funny.... broke another shot and there is was again.....What I was seeing was the gas being expelled from the muzzle!!! Honest, I had never seen that before!

After a couple of weeks of practice those new eyes took me to first place in my classification at an indoor smallbore prone match. In fact, I shot better with iron sights than with the 'scope.....go figure...

Two weeks later, I participated at the annual Sloughhouse-British Columbia Palma match held near Sacramento, CA, and got a chance to see what outdoor light would do...Well, the wind blew like crazy in directions I could never figure out (which I later referred to as "The search for the 2x4's on each side of the target").

But after plotting my shots I realized that the majority of my shots at 1,000 yards had held between 1/2 to 1 MOA vertically (I refuse to disclose the horizontal spread) with the majority being close to a perfect "waterline!" (Technical note: A great amount of this accuracy is due to the magnificent Palma rifle that was built for me by Bob Gamboa of Sacramento, California...Bob, who is a good friend, is without a doubt one of the last remaining craftsmen who just know how to do it right! Now, if he could only build a rifle that could hold 1/2 MOA of windage he'd make a million).



Six weeks after the procedure the first shots went down-range. Since it was January, these two targets were shot indoor, 50 yards, with iron sights from the prone position.

THE FINAL RESULTS

So here I sit, four months after the procedure with 20/20 vision, no astigmatism, and no reading glasses (the doctors swear I'll need them eventually but I hope they're wrong on this issue).

I have found that there are changes in how I see the target with respect to the size of the front aperture I use and the amount of light I allow through the rear sight. I'm more tolerant of light now than before and it's easy for me to see the target plus the number boards at 1,000 yards.

In my tactical shooting, I just completed two training courses dealing with tactical carbines for law enforcement and a "Force-on-Force" program presented by the Surefire Institute (see future story). In both cases, vision was never an issue. In fact, in the Surefire Institute program all participants are required to wear tight fitting goggles since the training uses paintball guns and members of the class shoot against each other. Those folks who had glasses had a continuous problem with fogging. I saw without any problems and they couldn't understand the S...-eating grin on my face.

Is this for everyone? No, but it's worth it for everyone who has a vision problem to explore their options. In my case, I was told that I was in the range of vision (my prescription at the time was -3.75 on one eye and -4.0 in the other) that would most likely result in obtaining 20/20 vision. Not everyone will end up with the same results and some people may still need corrective lenses. However, generally those folks are the ones who have huge corrections, sometimes in the area of -6 diopters or more and may be effectively "legally blind."

Yes, there are risks and there may be complications and careful research and thought is required. But from someone who was a success, I have become worse than a reformed smoker in preaching to anyone who will listen that, it's something I'll never regret having done. Cost? Depends on a lot of things and is something you need to discuss with the professionals but in my case the procedure was around $4,000 for both eyes.

By the way, I just returned from having my FAA Airmen's Medical Certificate for my Airline Transport and Flight Instructor licenses renewed. The new certificate states the vision is 20/15.....what did I say about "seeing is believing?"

For additional information:
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1-800-665-1987

Winchester's Edwin Pugsley Reminisces:

The First .50 BMG, Etc.

BY FRED BARKER

Edwin Pugsley started with Winchester Repeating Arms Company in 1911 and rapidly rose to chief engineer in World War I, factory manager in the 1920's, and vice president after the Olin family bought the company late in 1931. Though he started his career as an engineer, Pugsley soon became a manager—a very effective one—because of his uncommon combination of technical ability and personal qualities. He liked to deal with people.

Late in 1969 Edwin, who was reared on a Florida plantation and who studied first at Yale and then MIT (i.e., Massachusetts Institute of Technology for those readers from California), wrote a long letter to the MIT alumni/ae magazine. This letter first mentions his struggle at MIT with some classes and a curmudgeonly professor, and then turns to some highlights of working at Winchester from 1911 to 1951. The latter include some previously unrecorded happenings.

In April of 1917, when the U.S.A. entered WW I, the production of Springfield rifles was woefully inadequate for a major war. However, Winchester, Remington and Eddystone Arsenal had been making 10,000 to 12,000 rifles per day of the Enfield Pattern 1913/1914 type for Britain. By early 1917 these contracts were being phased out: see General Hatcher's chapter on the Enfield rifle in Hatcher's Notebook and Canfield's book A Collector's Guide To The Winchester In The Service (Maubray Pubs., 1991). Thus the Congress asked our military planners if Enfield rifles might be made and issued to US troops. Edwin said the Army, who much preferred the Springfield, and some Congressmen had "quite a controversy" over the matter. Congress prevailed, of course, and chief engineer Pugsley oversaw Winchester's retooling from the Pattern 13/14 and its rimmed .303 cartridge to the .30-06 Model 1917 Enfield rifle.

Winchester people worked day and night on the changeover, and their first rifle was completed at 10:00AM on a Saturday morning and ready for testing by the Army. Pugsley put it into the company Cadillac and drove at top speed to Springfield Armory. He arrived as the noon whistle blew, talked his way through the guards at the gate, and with the rifle in hand ran up the steps to the commanding officer's door. The Armory chief flabbergasted Edwin by telling him that the war would be long, the Armory personnel required a rest, the boilers needed cleaning, and so the Armory was being closed for two weeks. The new Enfield rifle could wait. This was a time, though, when many US recruits learned the manual of arms with a broomstick. Pugsley found the nearest phone and reported the officer's words to President Otterson of Winchester. Springfield Armory soon received orders from Washington to begin testing the rifle. Pugsley got things done!

Edwin's next task oversaw an order for 50,000 of the newly designed .30 Browning Automatic Rifles (Hatcher carefully describes this arm in his Notebook). However, there was a real problem about getting it into production: model drawings were not available and the only BAR in existence—one fired 50,000 times—was at the Colt factory in Hartford. Furthermore, the Colt people would only release this rifle to Winchester on Saturday afternoons and Sundays! By the third weekend Pugsley's people had enough data to start tooling up, and in just three months and five days the first BAR was completed.

With BAR production well in hand, President Otterson told Edwin that he had orders for 50,000 Colt M1911 pistols and several million rounds of .45ACP and .30-06 ammunition. Pugsley asked Otterson who might fill these orders and with what machinery? Otterson thought that New Haven had enough small manufacturers. Edwin looked around, found some gun-making machines and a cartridge plant, and was able to get production going.

Pugsley's biggest challenge came in midsummer of 1918. Col. Earl McFarland of U.S. Army Ordnance unexpectedly walked into Edwin's office, swore him to secrecy, and told him that Quentin Roosevelt's fighter plane had been shot out of the air in France. The .30 caliber bullets from Roosevelt's machine guns had

Continued on next page

Winchester's Edwin Pugsley Reminisces:

Continued

bounced off an armored German plane. General Pershing had asked Ordnance for a gun that would penetrate such armor. McFarland instructed Pugsley that the new gun was to be "at least .50 caliber". Also, John Browning had started design of the gun at the Colt factory, and Winchester was to develop the ammunition and barrel. Edwin started right in and said that he scaled up the .30-06 case to .50 caliber, and had some rounds and a barrel made. These were test-fired at the Colt factory and found to have insufficient "powder capacity" (velocity was not up to a figure specified by Col. McFarland?? Pugsley gave no details.) Edwin judged that the case needed to be one-quarter inch longer, he and McFarland "checked our figures", and new rounds were made. Accordingly, Mr. Browning was furnished dummies of the longer round.

John Browning and Colt workers completed the first .50 Browning Machine Gun by early September, after about two months of effort. Otterson and Pugsley took 100 rounds of the ammunition to the Hartford airport, where Browning was to demonstrate the gun to the Chief of Ordnance, the president of Colt, and other interested persons. Browning put ten rounds into the belt, fed it into the gun, and pulled the trigger. The gun fired once and jammed(!). Browning then took a "dilapidated" two-foot-long carpenter's rule from his pocket (the only measuring tool Pugsley ever saw the great inventor use), laid a round against it, and said that Pugsley made a mistake—the round was one-half inch too long (note: not one-quarter inch?). Col. McFarland reminded Browning that he had been given dummies (by McFarland himself) of the redesigned round. Browning muttered that "possibly the dummies had gotten mixed".

At this failed test firing Otterson told Chief of Ordnance General Williams that making the gun at Colt and the ammunition at Winchester presented problems, so why not turn the job over to Pugsley because he "didn't have much to do!" Gen. Williams agreed to the change. Pugsley went on to write that Browning's first gun was of water-cooled type, and that an air-cooled one obviously was needed for use in aircraft. He stated that Winchester made a "complete redesign" of Browning's original into an air-cooled gun. A demonstration of the BMG was planned for November 18 (one week after the war ended, as it turned out) at Aberdeen Proving Ground. The Winchester people worked around the clock, completing the gun on the 17th. That first firing of the .50 cal. Machine gun—before members of the Congressional Military Affairs Committee and other dignitaries—was entirely successful. ((Note: arms expert C. E. Harris published an article on the .50 BMG cartridge in Handloader 120 (March-April 1986). He stated that Browning invented the gun after WW I, that the cartridge was "based on a scaled-up .30-06" and developed at Frankford Arsenal, that early BMG's were water-cooled, and that air-cooled models originated in the late 1930's. I note that if one scales a .30-06 case to .50 cal. (I.e., multiplying '06 dimensions by 1.67) the overall length becomes about 4.24". The actual BMG case, however, is nominally 3.910" long. Its shoulder angle is 15 degrees and 44 minutes—not the 17.5 degrees of the '06. So Pugsley's WW I case 0.25" longer than a scaled-up '06 case obviously is different from the BMG case as we know it. So, as Harris stated, we may presume that Ordnance engineers redesigned the case. And does anyone know if the Winchester-made .50 cal. machine gun and ammo of the November, 1918 test are preserved, or were they scrapped?

There is another .50 cal. rifle of 1918 that Pugsley does not mention in his letter, a bolt-action antitank rifle. Herbert G. Houze's book on the Winchester company (Winchester Repeating Arms Company, Its History & Development From 1865 to 1981: Krause Publ., 1993) gives a photograph of this rifle.

Edwin Pugsley's letter does not mention some of his contributions that many modern shooters appreciate. These include overseeing the origin of the M52, M54, M70 and other rifles; the M21 double-barreled shotgun; commercial adaptation of the .22 Hornet cartridge of the military-officer four W's (Wotkyns, Woody, Woodward and Whelen); and origin of the .220 Swift cartridge.

Edwin Pugsley's presence remains in two other ways. He was a major influence in originating the superb Winchester-Olin collection of firearms that is on display at the Cody Firearms Museum in Wyoming. Secondly, Houze's book gives a full-page photo of Pugsley and mentions in the caption that the celebrated and amusingly morbid cartoonist Charles Addams was a close friend of Edwin. Addams, also a gun collector, recreated his friend into a cartoon personage named "Pugsley". Hurrah for Edwin Pugsley!

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OKLAHOMA

LAW ENFORCEMENT SCOUT/SNIPERS TRAIN AT CAMP GRUBER, OKLAHOMA

BY SGT. SAM CHESNUT

About The Author

Sgt. Sam Chesnut is an 18-year veteran of the Oklahoma City Police Department. For the last 15 years he has been a member of the Tactical Unit. Sgt. Chesnut has been a member of the Sniper Squad since 1993. Since that time he has competed in and won several sniper competitions. He is an NRA Certified Firearms Instructor and has attended and instructed at many tactical schools and seminars. In 1996 he attended and graduated from the U.S. Army National Guard Scout/Sniper School at Camp Robinson Arkansas. Sgt. Chesnut is also a Charter Member of the National Tactical Officers Association. If you have any questions concerning Sniper/Counter Sniper related subjects or if you have any comments regarding this article you can contact him at Sgt. Sam Chesnut, c/o Oklahoma City Police Dept., Santa Fe Division, Oklahoma City, Oklahoma 73102. Or at E-mail address, sniper@ionet.net.

Continued on next page

The "Class Photo." Only a mother, or another sniper, could love faces like these.

Oklahoma Law Enforcement

Continued

On Sunday, 25 January 1998, a contingent of Oklahoma law enforcement officers met at Camp Gruber, Oklahoma to participate in the first Oklahoma Council on Law Enforcement Education and Training certified Scout/Sniper School. The contingent consisted of two sniper teams from the Oklahoma Highway Patrol, one team from the Lawton Oklahoma Police Department, one team from the Oklahoma City Police Department, and one officer from the Marlow Oklahoma Police Department. This course is unique in that it is the only known Scout/Sniper course offered to law enforcement officers based strictly on the U.S. Army's Ft. Benning Program Of Instruction.

Camp Gruber, Oklahoma is probably one of the most under rated training facilities in the U.S. Military today. Its MOUT Course, which bore a 2.3 million dollar price tag in the early 90's, is one of the most ominous courses in existence today. The heritage the camp possesses is sobering and the names of the various streets lend much to the understanding of its rich history. Anzio Gate, Sicily Road, Central Europe, Southern France, Rhineland, Rome Arno Road, Naples Fogia Road, and the list goes on. Camp Gruber proper encompasses almost 47 square miles of some of the most challenging terrain you can find. It was developed in the late thirties and early forties to serve as training grounds for such units as the "Fighting Thunderbirds" of the 45th Infantry Division. The 86th, 42nd, and 46th Infantry Divisions also honed their skills at Camp Gruber before going "over there." Patton's tank drivers were trained at Gruber due to the close similarity its terrain possessed to that which would be encountered in central and eastern Europe. When you drive along the roads of Camp Gruber you can see the many foundations that stand as silent reminders of the many buildings that housed men and women that once prepared themselves and others to face the enemies of freedom that were poised to spread their torment to a fearful world. It must have been an awe inspiring site in the hay day of Camp Gruber, Oklahoma to see the urgent preparations being made with the sounds of war rumbling across the sea. LZ Thunderbird is still used by the 101st and 82nd Airborne Divisions as they stay ready to

One of the OHP Sniper teams engaging the 1000 meter target during a "field fire" exercise. The only problem here is they need to get their heels down. Heels up will get you spotted. Getting spotted will get you killed. By the way, Troopers Kirk and Diaz successfully engaged the target.

defend our freedom as so many others in Gruber's past have done. There are accounts, although to a great extent classified, of special operations groups that still utilize the Camp Gruber Training Site. They covertly appear and then disappear as silently as they came. Although the nature and frequency of their visits is classified, the Delta Force has reportedly made use of the facilities on different occasions. All in all, Lt. Col. Nickles and Capt. Schauer have greatly contributed to the training and development of many units through their tireless cooperation with military and civilian agencies. Their contributions are in many cases unheralded but never the less very real.

The cadre of instructors for the school was comprised of SFC Kent Gooch, the current NCOIC of the USARNG Scout/Sniper School located at Camp J.T. Robinson, Arkansas. And Sgt. Sam Chesnut who is currently finishing his 15 years with the Oklahoma City Police Department Tactical Unit. SFC Gooch has a long history of involvement in sniping having spent 17 years of service with the USMC and then successfully completing the U.S. Army Scout/Sniper School at Ft. Benning after joining the National Guard. SFC Gooch has a long list of deployments as a sniper with the Marine Corps and finished his service with the Corps as Range Master with the Quantico MTU. Sgt. Chesnut was primary assault for the first 10 years of his service with the Oklahoma City Tactical Unit. Sgt. Chesnut has been primary sniper with the unit since 1993 and in 1996 he graduated from the USARNG Scout/Sniper School at Camp Robinson as a member of the "Top Gun Team."

The purpose of the school is two-fold to fill the existing needs of law enforcement today. The first mission of the school is to furnish the law enforcement sniper with the skills and techniques to successfully fulfill his duties to his respective unit. The second purpose of the course is due to the fact that the L.E. sniper finds himself in an ever expanding role today. He must not only provide the customary overwatch missions in barricaded person and hostage situations but he finds himself potentially pitted against militarily trained marksmen. Should the latter become the mission and the L.E. sniper is not prepared to understand and counter the tactics of such an adversary a "bodybag" may very well be the officer's reward. The

Continued on next page

One of the students during one of the "stalks". The camouflage would have been complete had he put a little more "natural veg." on the barrel of his weapon. Straight lines in nature will get you killed.

Oklahoma Law Enforcement

Continued

SFC Gooch and some students during a critiquing session after a "field fire" exercise. One advantage of using the "iron maiden" targets is that hits can be called by the spotter. And an occasional touching up with the white spray paint gets you a fresh target.

schooling given to our military snipers makes them the most formidable weapons in warfare today. And when they leave the constraints of the military structure they leave none of their skills behind. Should this person become involved in an anti-government/authority lifestyle he could become the worst nightmare the law enforcement community has ever faced. The only one who would have a chance of surviving an encounter with such a person would be someone of similar training. This school was developed to provide such training.

The POI offered by the Oklahoma CLEET Scout/Sniper School is a condensation of the Army's five week course. It omitted the "Armored Vehicle Identification" and the "Call for Indirect Fire" sections along with other non-law enforcement oriented tasks. No matter how aggravated you may get at a guy it is very unlikely that your department will let you call an artillery fire mission on him. (Editor: But has anybody actually tried it? I can understand a Police Chief being concerned about 4.2 mortars downtown, but surely a couple of 81mm mortars should not disturb the citizenry all that much...) Therefore the deletion of the "Indirect Fire" portion of instruction was not seen as a great loss. Other areas such as the "Basics of Marksmanship" and "Fieldcraft" though were heavily dealt with.

The students arrived at 1200 hrs. on Sunday for in-processing. The first order of business was at 1500 hrs. which was the inspection and advice on the construction of the participant's ghillie suit. Much to the surprise of many the ghillie suit has a very valid role in law enforcement sniping today whether your jurisdiction is urban or rural in nature. The total breaking up of the sniper's outline can be a great safety factor whether you are in a rural woodline or in urban shrubbery. The necessity for the sniper to remain unobserved is still the same. While the ghillie is certainly not the appropriate attire for all occasions it is one more tool that should be in the L.E. sniper's bag.

At 0700 hrs. Monday the classroom instruction began. The entire day was spent dealing with "Fundamentals of Marksmanship," "L.E. Sniping Weapons and Equipment," "Ballistics," "Range Estimation," and many other topics best dealt with in the classroom setting. The average day lasted from 12 to 15 hours in length and the first day was no exception. Many of the topics covered in class had to be studied during the student's "off time" to be practically applied the next day on the range. If there was any "down time" this managed to rather effectively fill it up.

Tuesday morning also began bright and early with the culmination of the classroom portion of the school. Then it was off to the range. The M-60 range at Camp Gruber was used due to its 1000 meter capability. While most of the drills did not extend to that distance several of the students availed themselves of a metal target approximately 1000 meters distant and successfully engaged it. There was joy in the camp at the sight of the impact on the distant target 1100 yards away. The first successful engagement of the far target was accomplished by the Oklahoma State Troopers and they weren't very quiet about it. They were a little hard to live with after that. The vast majority of the afternoon and early evening was spent confirming zeros and working on a method to use the factory Leupold duplex reticles to range objects using the mildot ranging formula. The method is very accurate and will be dealt with in an upcoming article. One disadvantage of conducting a school in winter is that it gets dark too early, and so it did.

Wednesday morning was spent conducting concealment exercises and a stalk. This proved to be very enlightening to the participants. The ease with which you can be compromised while being completely still was a real revelation to many. The need to not only establish your position in the shadows but in front of dark areas as well became very apparent. The highlighting given by a bright background was surprising to many of the "studs" (short for students). Then it was back to the range. The rest of the day and well into the night consisted of ranging, field fire,

Continued on next page

Oklahoma Highway Patrol Trooper Steve Kirk during the "Final Shot" test. It was a lonely feeling, but so is the world of the sniper. Either you will be able to make the shot or disaster looms.

Oklahoma Law Enforcement

Continued

and night fire exercises. It was a revelation to many just how effectively you can engage targets in very subdued light. Various exercises were conducted using artificial lighting from scout car headlights as well as their emergency equipment lighting. Consistent hits were registered at ranges exceeding 200 meters (220 yards). Once again a 13 hour day ended with much having been accomplished.

Thursday broke bright, cool, and clear. The first part of the day was spent in a graded stalk that involved varied terrain and a restrictive Final Firing Line (FFL). The students did very well and demonstrated that the instruction of the previous days had been taken seriously. All managed to achieve the acceptable rating on the stalk and it was back to the range. It should be noted that upon the completion of each and every exercise there was ample time allowed for debriefing and critiquing of the previous event. SFC Gooch's experience and expertise in the area of fieldcraft was invaluable. After a very short lunch the firing resumed. All targets had been moved and it was necessary to again use the telescopic sights and binoculars to range the targets. Once again the students were very accurate with the modified milradian ranging system used in the Leupold duplex scopes. Again time after time the distant targets were successfully engaged. The shooting went on until it was almost dark and then the check fire had to be given to prepare for the second half of the day.

After a short dinner break a situation developed, an FTX (Field Training Exercise). As the students waited in their barracks the Warning Order was delivered by Sgt. Chesnut and SFC Gooch. As a result of the murder of a law enforcement officer several suspects were reportedly hiding in a nearby complex. The complex was occupied by other anti-governmental factions and there was to be an assault on the complex at 0615 hrs., 30 January 1998. Prior to the assault the sniper teams were to move into the area and report to higher authority the number of other subjects and equipment available to the suspects. The class was then left alone to formulate

Last minute instructions while waiting for it to get dark enough for the "night fire" exercise. Notice the can of white spray paint in SFC Gooch's hand. It is used to "reface" the iron targets.

their plan. (Editor: Are mortars still out of the question?) The area to be used for the FTX was the "Liberty Village" MOUT Site at Camp Gruber. If you have never seen this place you have really missed something. God forbid that anyone will ever have to take down a place like that. It not only involves many treacherous buildings but over 1500 yards of winding underground tunnels. The tunnel complex is multi-level and a true nightmare. The objective chosen for the FTX was the control tower area at the center of the MOUT site. The suspects were the cadre and the exercise was culminated with a synchronized sniper initiated assault on the objective. The fire command was given by radio and it was conducted flawlessly. The only distinction to be made between the shots fired was due to the various distances necessary for the various positions. And so with the finish of the FTX the Thursday's day of training ended in the early morning hours of Friday.

Friday started bright and early at 0800 hrs. There was to be only one event for certain that day and it was the "Final Shot." This was the final exam, as it were, and it involved an "F" silhouette target which had been placed at an unknown range. The students were to wait in an area secluded from the firing line. One at a time they were to bring all necessary equipment to the FFP (Final Firing Point). They would have to accurately range the target and correctly compensate for the effective wind. After having done so they had one shot to effectively engage the target. If they hit the target they passed. If they missed it, they failed the course. The line from the movie "Navy Seals" was bantered about, that if you don't hit the target, "You never saw us; we weren't here." Fortunately all participants successfully engaged the target within the parameters given.

Of nine motivated and capable students that started the course, nine passed. The training was demanding but effective. The area covered in its POI was unique and very pertinent to today's mission for the L.E. sniper. An individual with a long history in Special Operations once said, "The very worst thing you can do to a soldier is to not train him. To send a soldier out without properly training him is signing his death warrant." The need for proper training of the Law Enforcement Sniper is real. The threat is real. So let us all train as we will be required to perform. We must have pertinent and realistic training. On at least this occasion, it was done.

One of the teams during a "night fire" exercise. The ability of the Leupold scope to see through the night was surprising to many of the participants. Consistent hits out to 220 meters were registered on a regular basis.

PRODUCT REVIEW

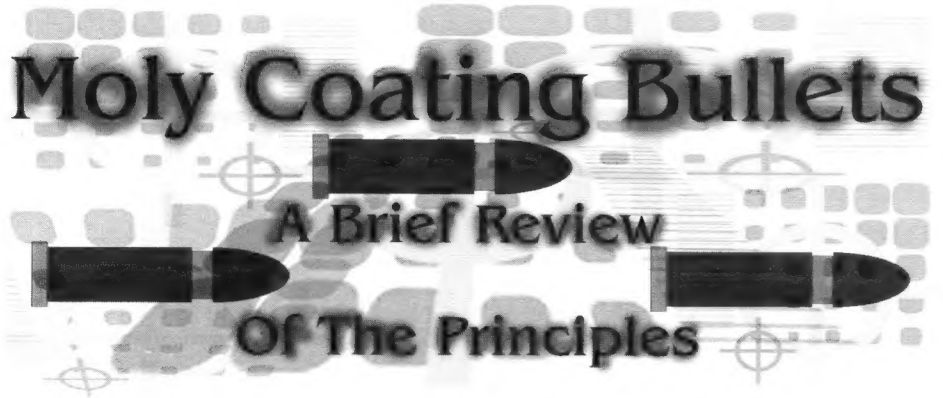
Belt clip at right comes standard on these trim little two-way radios.

BY ROGER CLOUSER

Dick Tracy two-way wrist radios for the masses cannot be far behind. Motorola's recently marketed Talk-About Plus walkie-talkies are only 4 1/2" and seven ounces, with a range up to two miles in flat open areas. They run on the Family Radio Service license-free UHF-FM frequencies, and have 14 channels and 38 privacy codes built in. Voice reproduction is excellent and they are easy to use. Ergonomics of the unit could not be much better and their small size and reasonable price open these radios up to a wide range of applications. In practical field use sportsmen of all persuasions can benefit from being in communication with each other. It is more convenient, saves time and provides greater safety. Whether your activities are hunting, skiing or hiking, the TalkAbouts are worth having along, especially with group talk and hands-free voice activated capability. But these cute little communicators are also a big plus in the suburban jungle, allowing for changes of plans during shopping trips and an electronic leash hard-wired into your kid's ear at the mall.

I found the perky colored models priced at $130 each in a popular catalog. The camo units were $145. The more you think about it the more you need a pair.

Three accessories are shown here. On the left is the ear bud and remote clip-on mike, with the radio snugged into the belt pouch, an arrangement secure enough to survive a sumo wrestling match. On the right is the flexible ear receiver, which allows privacy of incoming messages.



BY M. L. McPHERSON

(Editor: Recently a Canadian subscriber wrote us a fairly lengthy letter in which he related that there seemed to be a lot of contradictions in the arguments in favor of moly coating bullets. We bounced the inquiry off to columnist M.L. McPherson, with a request that his response "go back to the basics." Here's his comprehensive response...)

Dear Subscriber,

Regarding the reduction in both chamber pressure and velocity, which is associated with reduced bullet-to-bore friction: before delving into the issues you raise in your clear letter; first, let me note that friction can be addressed as the equivalent as an increase in mass. With more resistance, the propellant gasses have more to push against, with more to push against they can impart more momentum (velocity) to the bullet... Equally, with less friction, there is less resistance. With less resistance there is less for the propellant gasses to push against. The gasses can impart less momentum. Think about it.

Yes, peak pressure is reduced because a lower friction bullet starts easier and will, therefore, be further down the barrel before peak pressure occurs. Further, for two reasons, with the same powder charge, peak pressure will not be as high. First, the bullet is further down the barrel (there is more area for the propellant gasses to occupy). Second, the bullet is moving faster because it has already accelerated further down the barrel. (How could it not be going faster?)

Therefore, at each point in its passage through the bore, there will be less pressure pushing on the lower-friction bullet. You could argue that since the bullet has less bullet-to-bore friction, it should take less pressure to accelerate it to the same velocity. This is quite true. Albeit deceiving. I will address the reason in answering another point you made. In any case, because propellant powders are progressive burning substances (burning rate is in proportion to the confining pressure) any decrease in bullet drag is almost precisely offset by a corresponding decrease in pressure. If there is 10% less frictional resistance to the bullet's acceleration there will be 10% less pressure to accelerate it! (A genuine catch-22). So even if everything else were equal (which as I will explain next, it is not), velocity would not increase (at least significantly).

The explanation lies in the correct analysis of your second point. Chiefly, the powder charge does not produce any specific amount of kinetic energy (energy of mass in motion). Dump 60 grains of H4350 on the sidewalk and light it. How much kinetic energy is produced? Now stick the same amount of the same powder in a 30-06 load and devise your own comparison.

Fundamental thermodynamics requires (without possible exception) that the efficiency of any heat engine (which is *precisely* what a cartridge and gun are) is in direct proportion to the difference between ambient temperature and combustion temperature. Specifically, smokeless powder combusting at higher pressure can convert more heat energy into kinetic energy.

So, in the sense you mean, the "energy of the powder" in the two instances (high-friction and low-friction bullet with all other things equal) is not at all the same. The combination producing more pressure also converts more of the available chemical energy into kinetic energy. We all intuitively know this: consider otherwise identical loads using H322 and H50BMG (two powders which have precisely the same chemistry and grain-per-grain energy content). If we fill a 30-30 Winchester case full of each and seat a 110 grain bullet on top, which will produce more energy? Use of moly-plated bullets sets up a situation where the bullet moves out of the expanding powder gases way faster. This is *precisely* equivalent to using a slower burning powder.

You seem to be confusing work with force. Work is what results when force places mass in motion. The force used to engrave the rifling on the bullet does very little work. You could think about how much energy is imparted into the barrel by the same force. There is some in the elastic stretching involved but this isn't very much, not compared to what the bullet acquires. The secret is that the barrel does not accelerate very much. With no motion, there is no work. You can push on the wall all day but if it doesn't move, you haven't done one bit of work. Now you might be exhausted but that does not constitute work having been done.

One final point, propellant powders are progressive burning substances. When subjected to more pressure they burn faster. Your agreement ignores this basic fact. Further, just because all the powder might burn in both instances does not mean it can do the same amount of work. Powder that burns near the muzzle generates gases that can only push weakly on the base of the bullet and for a short period of time. Conversely, powder that burns when the bullet is near the chamber generates gasses that can initially push very hard on the bullet and can continue to push on it for a long time.

Your observation with the Stoney-point tool is a clear demonstration of just how effective a friction proofing agent molybdenum-disulfide is. It also should demonstrate the need to increase neck tension when using moly-plated bullets. Typically, reduce expander ball or neck bushing 0.002" in diameter.

Regarding your closing clause, the bullet does not "slow down" with moly, it simply is not accelerated to the same velocity because the area under the

Continued on next page

Moly Coating Bullets

Continued

time/pressure curve is reduced more than the difference in frictional losses. By simply increasing the powder charge about 3%, or going to a slightly faster powder, the bullet can be launched at the same velocity, but with less pressure. By additionally increasing the powder charge, to achieve the same peak pressure, the bullet can be driven to somewhat more velocity. The typical benefit is about 3%. This represents heat energy in the propellant gas that is not converted into barrel heating by bullet-to-bore friction. This 3% might not sound like much but in a typical 308 Winchester loading it approximates the muzzle energy of a 22 LR and represents a tremendous amount of barrel heating.

Mic McPherson

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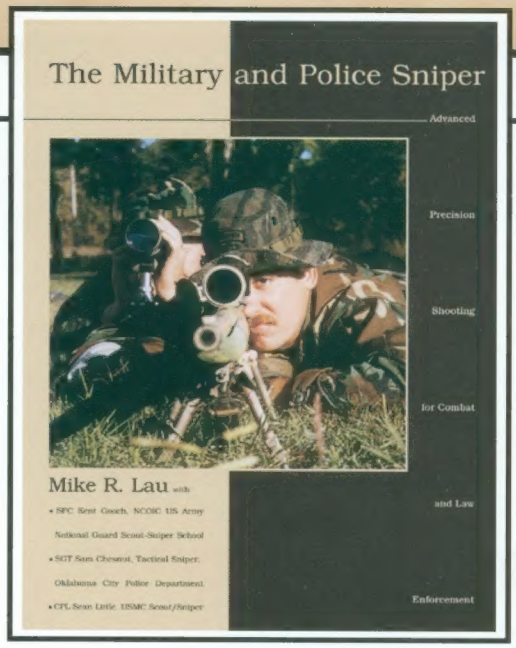

BY MIKE R. LAU

with SFC Kent Gooch, NCOIC US Army National Guard Scout-Sniper School; SGT Sam Chesnut, Special Operations, Oklahoma City Police Department; and CPL Sean Little, USMC Scout/Sniper.

The principal of Texas Brigade-Armory, (and *Tactical Shooter* core staff member) Mike Lau, together with a well-credentialed member of the Army Scout-Snipers, the Marine Scout/Snipers, and a large city law enforcement tactical shooter... brings to publication a totally new work for the serious rifle accuracy enthusiast. The philosophy of *Tactical Shooter* magazine carries over here, as well... the rifle, its supporting accouterments, and the art and science of firing it accurately, from 50 to 1000 yards... is our topic. Tactics, philosophy, chain of command... you can, and will have to, acquire elsewhere... we're rifle accuracy people, period. We explained this foundation philosophy and direction to Mike Lau when he started to author this book for us... and lo and behold, he took to the idea like a duck to water.

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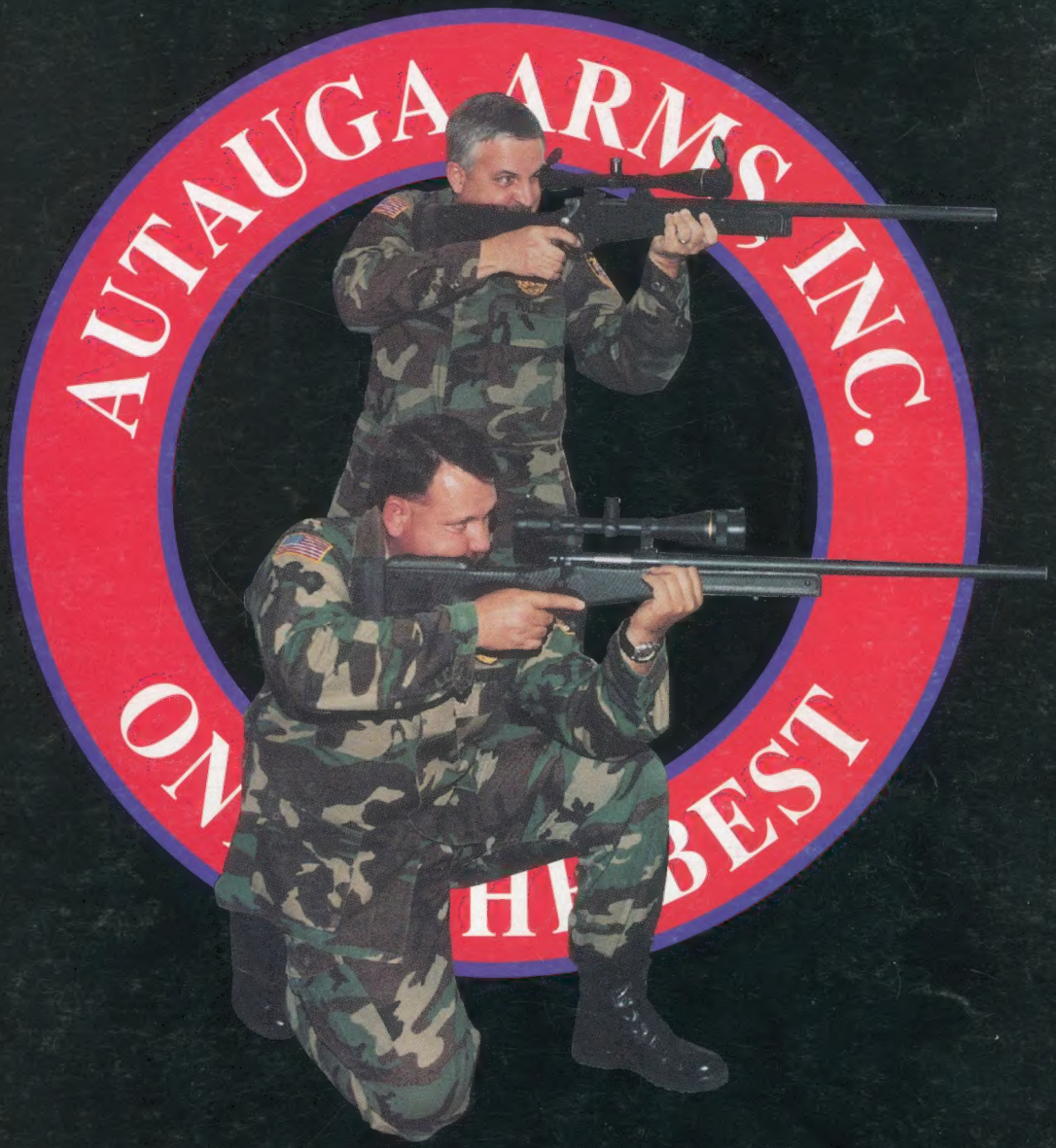

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